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JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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THE SIXTY-SEVENTH ANNUAL CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN NEW YORK CITY, DURING THE WEEK BEGINNING AUGUST 25, 1919.

The American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will meet in New York City, August 25 and 26, and in joint session with Section on Education and Legislation A. Ph. A.
Headquarters: Hotel Pennsylvania.

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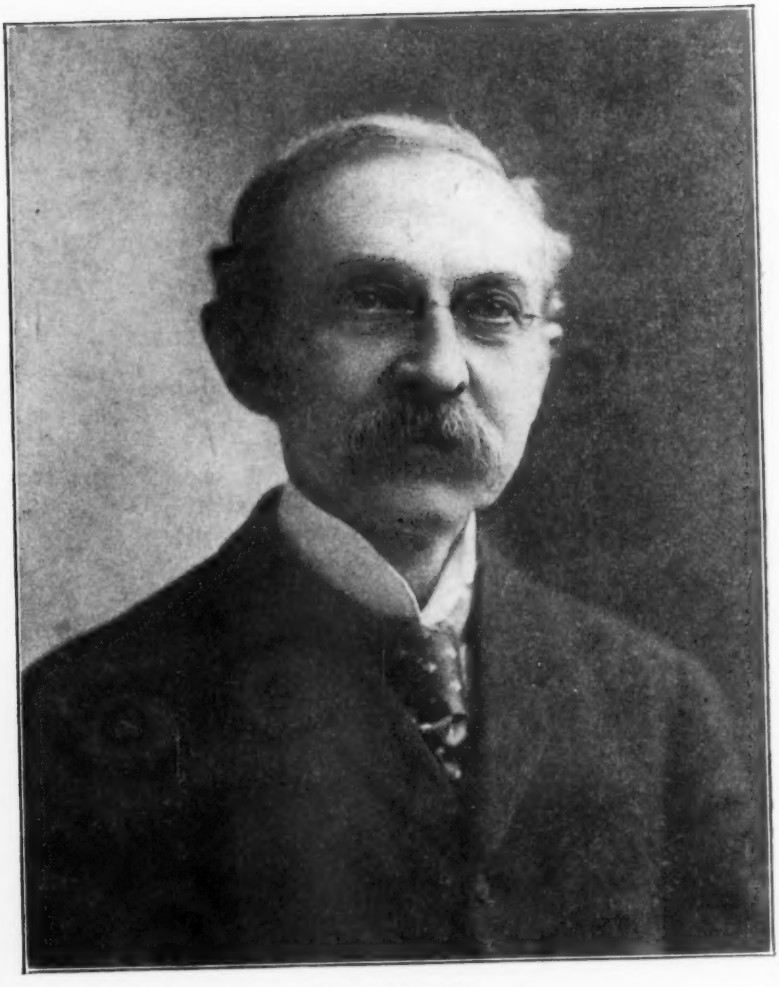
JAMES M. GOOD

ST. LOUIS, MO.

1842-1919

President of the American Pharmaceutical Association in 1895;
Chairman of the Council from 1888 to 1894; Chairman
of the Section on Education and Legislation
in 1894



JAMES M. GOOD

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VIII JUNE, 1919 NO. 6

JAMES MICHENER GOOD.

James M. Good, president of the American Pharmaceutical Association in 1895, died in St. Louis, May 15. The deceased was born in Bucks County, Pennsylvania, January 12, 1842. He received his early education in the local schools and, thereafter, taught in them for a number of years. In 1867–68 he attended the Philadelphia College of Pharmacy. Soon after the conclusion of the session he came to St. Louis and opened a drug store at 22nd Street and Clark Avenue. Twelve years later he bought a store at the southeast corner of Jefferson Avenue and Olive Street. A number of years ago he moved to the southwest corner of the intersection of the same streets; here he continued in business until shortly before his demise when he sold the store to the Page-Chapman Drug Co.

Soon after locating in St. Louis Mr. Good became interested in the St. Louis College of Pharmacy, first as officer and later as professor of pharmacy. In 1916 he retired and became emeritus professor. He was dean of the faculty from 1880 to 1904.

The Missouri Medical College conferred the honorary degree of M.D. on him and the Philadelphia College of Pharmacy that of Ph.M. He was president of the Missouri Pharmaceutical Association in 1888 and its treasurer from 1883 to 1887. He was active in local pharmaceutical organizations and president of the Cinchona Club at the time of his death. Besides the presidency, Professor Good held other important offices in the American Pharmaceutical Association—chairman of the Council from 1888 to 1894. He was elected member of the U. S. P. Revision Committee in 1900 and re-elected in 1910.

Mrs. Good, nee Alice J. Wilson, of Chester County, Pa., died a few years ago. A sister and one daughter survive. The pall-bearers were former clerks, and officers and members of the faculty of the St. Louis College of Pharmacy. Professor Good joined the American Pharmaceutical Association in 1871. E. G. E.

A GRANT FOR RESEARCH.

The American Pharmaceutical Association has available a sum amounting to about $240 which will be expended during 1919–1920 for encouragement of research. This amount, either in full or in fractions, will be awarded in such manner as will, in the judgment of the A. Ph. A. Research Committee, produce the greatest good to American Pharmaceutical research.

Investigators desiring financial aid in their work will communicate before August first with H. V. Arny, Chairman A. Ph. A. Research Committee, 115 W. 68th St., New York, giving their past record and outlining the particular line of work for which the grant is desired.

The committee will give each application its careful attention and will make recommendations to the American Pharmaceutical Association at its meeting in New York, August 25–29, 1919, when the award or awards will be made.

CHARLES HARRISON BASSETT
BOSTON, MASS,
Joined the American Pharmaceutical Association 1867—a Member for 52 Years

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

LOOKING BACKWARD.

"Credit to Whom Credit is Due."

ONCE, only, in a lifetime, comes the opportunity of standing on the three-score-and-ten-year line. Comes then, naturally, a looking backward and a thinking forward. And amid these reflections come questionings as to the usefulness of the life that is past, as well as concerning one's relationship to the field occupied.

For more than half a century, the thought and action of the writer have been devoted to, and dominated by, what is known as the art of pharmacy. On this, his seventieth anniversary, he comprehends, more fully than ever before, that the opportunity of every moment has been dependent upon the works of others, some of whom have been to him companions in the passing along, while the majority have been afar, both in location and in time. But yet they are no less companions. They stand a legion, stretching back, back, to the mists of traditional times, their very shadows lost in the bloom of antiquity.

The manipulation of drugs and the uses of remedies have ever been man's great concern, but in the passing along, their study has ever been inextricably complicated with charm, astrology, folk-lore, astronomical formulas and alchemistic empiricism. Who, with the record of the past before him, would attempt to separate pharmacy from medicine, past or present, or medicine from surgery? Who would even attempt to subdivide the medicine of former times into such distinct sections as surgery, chemistry and pharmacy? Who would venture to draw a clear-cut line between their shadings, or between these and connected professions? And as regards the contributions of any one man, who can say, "This came from himself alone?"

"Credit to whom credit is due." Whatever may be one's part or his sphere of activity, surely his personal opportunity depends largely upon the service rendered by others, seen or unseen. In the labyrinth constituting the whole, the trifle each has to offer disappears, so far as his personality is concerned, as sinks a grain of sand in the ocean. His contribution of a life work is but a mite—the flashing of a shaving in the night.

Looking backward, with this thought in mind, let us venture to consider the wondrous Code of Hammurabi, who in ancient Babylonia, a thousand years before Moses was born, formulated the laws embracing medicine and surgery. Did not he, too, look backward? Thinks anyone that he *created* the necessity for those ideals? Did he not, by offering these rules of conduct, give evidence that, as a leader, he was thinking not alone of the past and present, but hopefully and help-

fully of the future? Marvelous is that precious first book on Egyptian medicine, so admirably described in the lectures of Dr. Zwick—the *Papyrus Ebers*, handed down to us from a civilization that had its day indefinite thousands of years before the hoary pyramids were built. Does not every feature show that pharmacy was even then important as a foundation for the healing of humanity's ailments? In the entrancing Oriental *Arabian Nights*, is not pharmacy exemplified by numberless references to drugs and processes, some of them speculatively seer-like, others purely pharmaceutical? Does not "*Charaka-Samhita*," the most ancient of all works on medicine in age-worn India, indicate, by reference to an older work, a part of the "Atharvan" (no trace of which can now be found in print), the existence of a pharmacy of even a long anterior date? Do not the Vedas, that strange poetic work on the Science of Life, touch pharmacy in ceremonial processes? Who knows the part pharmaceutical manipulations of that day took, outside the concocting of the intoxicating drink, *soma*, used in the sacred sacrifices? Turning now to our own sacred writings. Consider the tributes paid in the Old Testament to the uses of the herbs of the field, which could only by manipulative processes have been prepared. Turn then to the more modern New Testament, in which one might even argue that the great ethical Leader entered the field of pharmacy when, to compound an eye remedy, He made a mortar of the palm of His hand, and a pestle of a finger. Indeed we find that, in early church annals, Christ was portrayed as an apothecary.*

Follow briefly this line of thought, in its numberless radiations, not neglecting the mortar and pestle relics scattered over the lands of the dead to history, cliff-dwellers of western America. Consider the story as a whole. Let us ask: Do not the symbols of pharmacy to-day stand as a relic of service in every land and in every nation? The hand that held the pestle surely may claim to have a part in the old, old, and yet older civilizations that, born in times unknown, bred in misty eras near the prehistoric, to die before the *word* pharmacist existed, yet testify in their records that the *art* of pharmacy was of it all a factor.

With these reflections, let us pass from this entrancing field and center our thought on a few incidents of the nearer past. Think now of the men who delved and *found*, as well as those who delved and *failed* to find, in the nearby Middle Ages. Neglecting details of the times of alchemistic hallucinations, of those strange fanatics who floundered in a realm of mystery, let us pass to the nearby present. Uprise the names of hundreds who, both before and after the separation (very recent as time counts) of the practice of medicine and surgery from the art of pharmacy, have as pharmacists contributed to nearly every phase of modern human activity. Consider only a few of these apothecaries, comparatively re-

* "Christ as Apothecary." Prof. Edw. Kremers, in *Pharmaceutical Review*, 1899, pp. 338–341.

cent.[1] Think what the world would be to-day, but for their patient efforts, the results of which are voiced in their contributions.[2]

Consider the Swedish apothecary, Scheele, who discovered oxygen, contemporaneously with, but independently of Priestley, and thus laid the foundation for the new chemistry of Lavoisier. Did not Scheele, while making lead plaster in his little apothecary shop, also discover glycerin, and thus open to view the chemistry of fats and fatty oils, afterward worked out so admirably by Chevreul? Did he not, by isolating various acids from plants, lay the foundation for the study of organic acids? And yet,

"Scheele always remained the humble apothecary, dying from overwork, in the best of his years, in the little community of Koeping, in Sweden."

Consider the wonderful outcome of the work of the compounder of medicines, Trommsdorff, an apprentice to his father, whose father before him had been a pharmacist. From this pharmacy home, Trommsdorff became Professor of Chemistry in the University of Erfurt, and a companion of the celebrated Liebig, with whom he became closely associated editorially. Trommsdorff's Annalen was the fore-runner of the Annalen der Chemie, which to-day bears Liebig's name.

Think of Derosne, the Parisian apothecary, and Sertürner, the German apothecary, who simultaneously, but independently, isolated morphine, announced by Sertürner in his article on Morphine. To this discovery, linked with those by Scheele and other investigators, we owe the very beginning of the science of Pharmacology, now so important, in which isolated and definite chemical compounds from plants became subject to quantitative therapeutic treatment.

Turn next to Nicholas Lémery, the French "Court Apothecary" of the 17th century. Did not his great work on chemistry (possibly the first that was practically free from alchemistic complications) become a veritable text-book on the subject, thus opening the door to a new chemical literature? It has been recorded that,

"Every man of that date interested in any phase of chemical thought considered it necessary to possess one of the seventeen editions of the *Cours de Chimie* issued by Lémery during his lifetime, and repeatedly revised thereafter, being translated into the language of every European country."

Leans not co-laboring science, as a whole, on this pillar erected by a pharmacist?

Stands in Paris, to-day, a monument in honor of two Parisian apothecaries, Pelletier and Caventou, the discoverers of strychnine, who, following the dis-

---

[1] Before me lies a compiled list of nearly one hundred, whose avocational efforts touch practically every phase of life, from poetry and literature to materialism, personified. Very difficult is it, from this wealth of opportunity, to select a few names as a text.

[2] Admit that when time is ripe, the man appears. And yet, since the apothecary dominated the field, had not these men opened the door, the next nearest would naturally have been other apothecaries.

covery of morphine by preceding apothecaries, made to humanity the mighty gift that ushered in the systematic study of alkaloidal chemistry.

Prodigious was the work of the English authority, Pereira, whose Materia Medica and Pharmacology was the most complete publication on that subject in the English language, to that date. Very close came Hanbury, the talented searcher of the world for materia medica specimens and supplies, who exercised a marked influence upon the world's commerce. Flückiger, the celebrated Swiss pharmacist and chemist, made of him a companion. Together they produced the *Pharmacographia*, that marvelous hand-book, combining history, botany and descriptions of drugs, the greatest and best ever devoted, in the English language, to the science of that subject. Then, we should not omit G. C. Wittstein, the father of manipulative pharmacy, whose processes are standards to-day in the practice of pharmacy.

From the time of Galen, backward to the mists of antiquity, we find the pharmacist and the physician hand in hand, indeed they were *one*, so far as can be determined. Even to near our day we find the compounding of medicines inseparable from therapy in its various forms and transformations; the dealer in drugs and medicines a prescriber, the physician a compounder, and the barber a surgeon.

May not this writer, who is presumably nearing the close of his activity in pharmaceutical lines, offer this tribute to his co-laboring companions, afar off in home settings, as well as in time? And, may not this record of the past give him the privilege of turning toward the future, and thinking forward? J. U. L.

THE FORMER PRESIDENTS AS AN ADVISORY COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

THE proposition to form an Advisory Council of the former Presidents of the American Pharmaceutical Association is not new. In fact at the Detroit meeting in 1914 this was presented in the presidential address, in the following manner: "No man has yet been honored with the high office of President of this Association who has not concentrated his thought toward the betterment of the Association. The duties of the office have given him opportunities for observation and the obtaining of knowledge of men and affairs relating to pharmacy. The question has arisen, 'What are we doing to profit the Association by their special knowledge and ability? What shall we do with our ex-Presidents?' I would advise that they be constituted an Advisory Council to which certain questions calling for wise consideration and mature judgment may be referred by the Association or the Council."

It is a matter of record that the Committee on President's Address "regarded favorably" this proposition and that the Association "adopted" the recommendation. Although nearly five years have elapsed since this action was taken, noth-

ing whatever appears to have been done toward making the *adoption* effective or of the least value to the Association.

It is not an unusual procedure for organizations such as the American Pharmaceutical Association to have an advisory body similar to that proposed as the Advisory Council of the A. Ph. A., and such a plan has been found to be of great value to industrial managements. What business organization would think of adopting a plan by which it would annually appoint a specialist to give careful study to the particular problems of its industry, at the end of that short period listen *attentively* to his report and suggestions for betterment and progress, and then after approving the recommendations cast them into the discard?

It is the principle of ACTION that assures the success of any enterprise, whether applied to the activities of an industry or of an association. What the Association has lost in the way of progress by thus neglecting to utilize the valuable assets available, namely, the special knowledge of the needs of the Association, the realization of the possibilities of its service, the clearer insight into its affairs and the love of the Association and desire to advance its standing, can not now be measured. It certainly has not been to the best interests of pharmacy that our retiring Presidents have been shelved with such scant consideration of their labors and their concern for the welfare and progress of the Association.

It is believed that the present is an opportune time to revive this project, and that no further time should be lost in crystallizing into action the expressed will of the Association, which has a firmer foundation in its practicability and usefulness than merely in the sentiment associated therewith. G. M. B.

THE PROPOSED RESEARCH INSTITUTE.*

BY H. V. ARNY.

That the proposition of Dr. C. H. Herty regarding the establishment of an institute for research in the chemistry and pharmacology of medicinal substances is attractive goes without saying; that the creation of such an institute is desirable is equally true. These basic principles being accepted, the remaining questions are largely matters of detail, such as scope, ideals and management. Up to now the proposition has been so vaguely outlined that much discussion and considerable difference of opinion have obtained and until some definite plans are evolved this confusion will continue.

SCOPE.

The original proposition seemed limited to the synthesis and manufacture of organic chemicals and pharmacological investigations as to their possible medicinal effect. From this simple start, the discussion has extended to the widest ranges of drug study. Certain representatives of drug manufacturers have seemed to assume that the main function of the institute would be to pass on pharmaceu-

* Presented before Philadelphia Section, American Chemical Society, May meeting, 1919.

tical products and to give such official approval not merely of the institute, but indirectly of the American Chemical Society itself. Others have suggested lines of phyto-chemical research; others have urged work on pharmacopoeial revision. A definite statement of scope is highly desirable for there are in many of the suggested fields of endeavor pitfalls that might lead our great Society into extremely embarrassing situations. There is a particular danger in the original idea of synthesizing new remedies and then setting upon them the seal of approval of the institute and of its official backers. Those of us who are familiar with pharmacy know full well the remarkable propaganda conducted in this country from the early nineties until 1914 by Germans in behalf of the medicinal products of their chemical laboratories. I, myself, an alumnus of a German university, had my first revelation of Hunnish activity in the methods pursued in conducting the propaganda in question. Medical America would be told that the latest product of the tar barrel—let us call it "Nirvana"—was the only simon-pure hypnotic absolutely devoid of habit-forming qualities and this fact would be attested to by Herr Geheimrath Doktor This and by Herr Professor Doktor That, until the recommendation of a German medical man for any German product produced incredulity among those in America who knew, until the statements were confirmed by American medical authorities. Let those who are planning the institute beware lest similar commercial influences creep in and ruin the fair edifice about to be erected.

IDEALS.

The foregoing paragraph naturally leads to the thought that a prompt enunciation of the ideals of the proposed institute is imperative. While not positively stated, it is assumed that a considerable amount of the proposed fund is expected to come from the pharmaceutical manufacturers of this country and the writer has positive knowledge that the interest manifested in the institute by certain manufacturers is not entirely altruistic. As was well pointed out by Dr. Weidlein, of the Mellon Institute, at the meeting held in New York on November 8, 1918, any research institute founded upon the principle that donors to its endowment will secure commercial advantages out of their philanthropy is from the start destined to failure. Of vital importance is it that from the beginning of the campaign for funds for such an institute, the altruistic nature of the services of the institute be emphasized in order to impress upon prospective donors the fact that no *quid pro quo* need be expected.

MANAGEMENT.

A widely expressed criticism of the plans for the institute so far offered is the fact that while medicine is frequently spoken of in connection with the institute it is evidently the intention of its proposers to make it primarily a creature of the American Chemical Society. A greater blunder than this can hardly be imagined. It seemed singular to many that no mention was made at the meeting of November 8 of the remarkable work done by the Council on Pharmacy and Chemistry of the American Medical Association. The writer holds no brief for that body and in fact has objected emphatically to certain of its findings which he has considered arbitrary, but the fact still remains that no one factor has done more during the past fifteen years to purify materia medica than the A. M. A.

and its Council on Pharmacy and Chemistry. It may be that it is too much feared for the enemies that it has made to be acceptable to those planning the institute, but if this is so, it is patent that at least the more highly specialized medical organizations such as the Society of Pharmacology and Experimental Therapeutics or the American Therapeutic Society should be invited to participate in the organization of the institution. Another blunder is the apparent omission, by the proposers, of the American Pharmaceutical Association as a factor in organizing the institute. I am well aware that among certain chemists pharmacy is considered merely as the keeping of retail drug stores, but it is at least inconsistent to expect to interest drug manufacturers in a project from which their mother organization is excluded. When the present leaders of the American Chemical Society were infants in arms, the American Pharmaceutical Association was a lusty organization. Age, and merely age, may mean dotage, but in the case of the A. Ph. A., now in the sixty-seventh year of its existence, it numbers almost three thousand men and women including all of us who not only preach but also practice professional pharmacy. If challenged to show the professional side of pharmacy, we need only refer the critic to the fifty-nine volumes of Proceedings of the A. Ph. A. (1852–1910) and to the volumes of its JOURNAL since 1911. In these are found the results of the researches of Procter, the Father of American Pharmacy; Squibb and Diehl whose work on drug extraction placed them among the pioneers in the field of capillarity; John Uri Lloyd, whose work on capillarity and adsorption is known to all of us; Power, the greatness of whose work on phytochemistry is scarcely appreciated; Schlotterbeck, the investigator of papaveraceous alkaloids; Kremers, the painstaking delver in the field of terpene chemistry; Maisch, the winner of the Hanbury medal; Rusby, the botanical explorer; Kraemer, the pharmacognosist; to say nothing of scores of others fully deserving a place in the pharmaceutical Hall of Fame. American pharmacy always has had and always will have a group of investigators the peers of any other department of knowledge and the rallying point of this group is the American Pharmaceutical Association.

FINAL SUGGESTIONS.

Up to this point, this paper may appear critical rather than constructive. It is critical as to the vagueness of the proposals made thus far by those behind the movement. May the present writer be permitted to make a few suggestions, attempting at the same time to point out how more enthusiasm may be aroused in the institute plan? In making the suggestions, I am speaking solely as an individual member of the American Chemical Society. As chairman of the Research Committee of the American Pharmaceutical Association I must be extremely careful to avoid any impression that either the research committee or the parent association approve or know of the crudely outlined plan I am about to propose.

To make the institute a real success, the money raised must be given without any conditions whatsoever beyond the bare statement that the institute is to be conducted in the interest of research in medicinal substances and that under a competent directorate.

Its work should be conducted under the joint auspices of the American Chemical Society, the American Pharmaceutical Association, and such national med-

ical associations as may hereafter be decided upon. From its inception, the work of the institute should be divided into at least four departments, each with a departmental head of equal power and voice; the four departments being (*a*) chemistry, (*b*) pharmacy, (*c*) pharmacology, (*d*) practical therapeutics; over these four responsible officials there being a director, whose duties shall be largely executive.

Of course, as the institute grows, other departments may be necessary, but from the beginning the four enumerated above are essential, if the institute is to do work worthy of its proposers.

This summary of my thoughts is presented for discussion this evening, with the full appreciation that the suggestions offered are fragmentary. But there is at least something tangible in them, no matter how you may chance to view them; which is more than can be said of most of the discussion of the institute up to the present time.

LOCAL ANESTHETICS—NITRIC ACID COLOR TEST.*

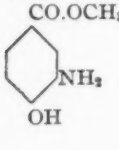
BY TORALD SOLLMANN.

This investigation started with the observation that an American sample of procaine gave a deep rose color with nitric acid. Further comparisons showed that this was due to a rare impurity, all other samples of procaine being only very slightly colored. The nitric acid test therefore appears to be a rapid method of assuring the absence of this unknown impurity. Although the pharmacology of this impurity is not known, official requirements should be framed so as to exclude it.

The nitric test was then applied to other local anesthetics. With the exception of orthoform-new, these remained colorless, even on drying. Orthoform-new gave a well-defined color reaction, and can therefore be easily differentiated from all the other local anesthetics. The test is positive even when applied directly to very complex mixtures, f. i., to orthoform lozenges.

A glance at the structural formula of orthoform, which gives the test, and the related anesthetics that do not give it, indicates that its reaction depends either on the introduction of the OH group, or on the different position of the NH_2 group —presumably the former.

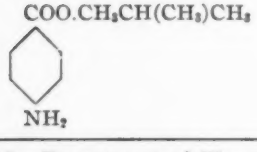
Orthoform-new.



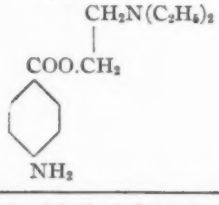
Anesthesin.

Propaesin.

Cycloform.



Procaine.



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* From the Department of Pharmacology of the Medical School of Western Reserve University, Cleveland.

The nitric acid test consists simply in adding a drop of concentrated, colorless nitric acid to a little of the dry powder, on a white plate. The results with procaine are shown in Table I, those with other local anesthetics in Table II. The melting points of the procaine samples were furnished by the Chemical Laboratory of the American Medical Association. It is noteworthy that the sample giving the color-reaction also had a melting point below that of all the other samples, *viz.*, 152–152.5 as against 153–155 degrees.

The positive reaction of orthoform and the negative result with all of the others, agree with the statement of Gadamer, *Lehrb. d. chem. Tokikologie*, Goettingen, 1919, page 490. He also examined a few further anesthetics that are not available at this time, and which are added to the table on his authority.

TABLE I.

RESPONSE OF PROCAINE SAMPLES TO NITRIC ACID TEST.

Sample (code).	Color.	Melting point (° C.)
Novocaine, Hoechst, powder	Practically colorless	.....
Novocaine-epinephrin tablets	Practically colorless	.....
Novocaine, Koechl, tablets	Practically colorless	.....
Procaine, R 121817	Practically colorless	153–154.5
Procaine, M 82318	Light yellow	154–154
Procaine, H	Light yellow	153–154.5
Procaine, A 89997	Very slight brown	153–154
Procaine, A 12918	Very slight brown	153.5–154.5
Procaine, R 82018	Slight brown	153–155
Procaine, R 82318	Slight brown	.....
Procaine, R 121817	Practically colorless	153–154.5
Procaine, R 82018	Slight pinkish Brown	154–155
Procaine, R 82318	Slight pinkish Brown	153–154.5
Procaine, R 5218 (three samples)	*Deep rose pink*	152–152.5

TABLE II.—RESPONSE OF LOCAL ANESTHETICS TO NITRIC ACID TEST.

The following remained colorless, even on drying with the acid:

Anesthesin (2 samples)
Alypin (tablet)
Apothesin
Beta-eucaine lactate (2 samples) and hydrochloride
Cocaine
Cycloform (2 samples)
Euphthalmin
Holocaine (Gadamer)
Propaesin
Stovaine (Gadamer)

The following give color-reactions:

Nirvanin: yellow (Gadamer)

Orthoform-new: faint pink, changing rapidly to violet and finally red (distinction from other local anesthetics).

SOME EFFECTS OF THE WAR UPON CRUDE DRUG IMPORTATIONS.*

BY CARL L. ALSBERG, ARNO VIEHOEVER, AND CLARE OLIN EWING.[1]

Few industries derive their raw materials from such varied sources as does the drug industry. Camphor from Formosa, cloves from Zanzibar, asafoetida

* Based upon an illustrated lecture delivered by C. O. Ewing before Scientific Section A. Ph. A., Chicago meeting, 1918.

[1] A contribution from Bureau of Chemistry, Department of Agriculture, Washington, D. C.

TABLE I.—SOME EFFECTS OF THE WAR UPON

Commodity.	Grade to which wholesale prices apply.	1913. Imports in 1000's Lbs.	1913. Declared value per lb.	1913. Average wholesale price for grade quoted.	1914. Imports in 1000's Lbs.	1914. Declared value per lb.	1914. Average wholesale price for grade quoted.
Aloes	Curacao	909	0.086	0.101	918	0.071	0.084
Buchu	Short	105	1.086	1.555	125	1.030	1.375
Cinchona	Yellow quill	3330	0.106	0.23	3655	0.127	0.23
Coca	Truxcillo	1176	0.118	0.285	712	0.128	0.241
Ergot	Spanish	224	0.931	1.556	186	0.529	0.956
Gentian	.....	1797	0.049	0.069	2182	0.050	0.066
Ipecac	Cartagena	55	1.576	2.094	79	1.403	1.702
Jalap	.....	277	0.161	0.225	209	0.115	0.169
Licorice	Selected	105033	0.017	0.099	86754	0.018	0.092
Nux vomica	.....	2307	0.017	0.028	1891	0.017	0.037
Opium, crude	.....	441	4.83	6.51	441	3.92	6.27
Opium, powdered, etc.	Powdered	49	7.94	7.79	32	6.42	7.64
Orris	Verona	358	0.104	0.129	580	0.124	0.146
Rhubarb	High-dried	122	0.136	0.211	181	0.123	0.161
Sarsaparilla	Mexican	301	0.136	0.157	225	0.165	0.263
Senna	Tinnevelly	2634	0.057	0.085	2455	0.070	0.080
Tragacanth	Aleppo seconds	1402	0.354	0.702	1302	0.354	0.90
Vanilla	Mex. cuts	1050	2.52	3.278	695	2.43	3.203
Total		121570	20.224	25.104	102622	17.094	23.615
Add for increased duty		....	....	....	....	3.048	....
Total		....	20.224	25.104	....	20.142	23.615
Percentage comparison of declared price plus increased duty, 1913, as base		....	100.0	....	....	99.5	....
Percentage comparison of wholesale price of grades quoted, 1913, as base		....	....	100.0	....	....	90.1
Annual percentage comparison between declared value plus increased duty and wholesale grade price		....	100.0	143.4	....	100.00	112.2
Percentage comparison of imports, 1913, as base		100.0	....	....	84.4	....	....
Percentage comparison of imports, 1914, as base		....	....	....	100.0	....	....

*Compiled by E. E. Stanford from "Foreign Commerce and Navigation of the United States," and "Oil, Paint, and Drug Reporter."

from Persia, rhubarb from China, sarsaparilla from Mexico, musk from Thibet, opium from Turkey, ergot from Russia and Spain, chamomiles from Germany, tragacanth from Asiatic Turkey, ipecac from Colombia and Brazil, cinchona from Java, senna from Egypt and India, ginger from Jamaica, benzoin from Siam and Sumatra, Peru balsam from Salvador, saffron from Spain and Italy, eucalyptus from Australia, lavender from France, attar of roses from Bulgaria, valerian from England—the list could be long extended. From sources so diverse as these, freedom of the seas is essential that each land may contribute its quota of supplies. Small wonder, then, that a world-embracing war, affecting so seriously the ordinary channels of trade, should have a far-reaching influence upon the amount and character of our imported crude botanicals.

At the outbreak of the war, with the first scurrying of ships to the protection of neutral harbors, for a short time imports almost ceased. Soon, however, the promise of a golden harvest brought forth the ships again, and the brief lull in importation passed. While imports of crude drugs decreased considerably, the actual tonnage decrease has probably been less than usually imagined. Some products have been cut off entirely; others have hardly been affected, and imports of some have even increased.

CRUDE DRUG IMPORTATIONS AND PRICES.

1915.			1916.			1917.			1918.		
Imports in 1000's. Lbs.	Declared value per lb.	Average wholesale price for grade quoted.	Imports in 1000's. Lbs.	Declared value per lb.	Average wholesale price for grade quoted.	Imports in 1000's. Lbs.	Declared value per lb.	Average wholesale price for grade quoted.	Imports in 1000's. Lbs.	Declared value per lb.	Average wholesale price for grade quoted.
953	0.095	0.130	1598	0.095	0.129	1236	0.079	0.094	1231	0.077	0.095
121	0.959	1.450	95	0.900	1.218	101	0.851	1.257	51	0.837	1.275
3951	0.142	0.271	3967	0.196	0.287	2531	0.271	0.375	3132	0.248	0.55
1048	0.090	0.400	948	0.113	0.375	635	0.142	0.375	1059	0.169	Nominal
142	0.651	1.340	123	0.600	0.825	166	0.487	0.730	140	0.578	0.606
1022	0.054	0.081	788	0.080	0.202	1780	0.122	0.162	413	0.112	0.151
138	1.802	2.019	204	2.380	2.581	85	1.730	2.193	61	2.005	2.937
176	0.105	0.107	201	0.067	0.106	169	0.117	0.123	127	0.271	0.509
82289	0.019	0.125	52784	0.034	0.202	59399	0.037	0.245	27051	0.068	0.257
2245	0.023	0.063	4356	0.031	0.067	2446	0.035	0.100	2740	0.041	0.127
353	4.81	7.68	117	4.54	10.47	43	7.69	19.30	21	12.430	26.812
39	7.93	9.53	44	5.52	11.69	78	8.21	22.05	98	15.372	28.187
554	0.095	0.129	602	0.103	0.113	528	0.116	0.133	466	0.119	0.183
234	0.105	0.158	156	0.113	0.175	239	0.079	0.209	191	0.109	0.377
250	0.104	0.166	291	0.142	0.126	146	0.130	0.174	111	0.284	0.587
2180	0.096	0.159	2974	0.130	0.258	5161	0.167	0.215	3575	0.215	0.175
1025	0.346	1.669	1130	0.522	2.069	474	0.720	2.025	525	0.531	2.069
749	2.45	3.206	797	1.85	2.641	733	2.16	3.833	759	1.584	3.612
97469	19.876	28.683	71175	17.416	32.534	75950	23.143	53.593	41751	34.881[1]	68.509[1]
...	4.065	...	...	4.065	...	...	4.071	...	...	4.018[1]	...
...	23.941	28.683	...	21.481	32.534	...	27.214	53.593	...	38.899[1]	68.509[1]
...	118.4	...	...	106.2	...	...	134.6	...	...	193.5[1]	...
...	...	114.3	...	...	133.6	...	...	213.5	...	...	285.2[1]
...	100.00	119.8	...	100.0	156.1	...	100.0	196.9	...	100.0[1]	176.1[1]
80.2	...	...	58.5	...	...	62.5	...	...	34.3	...	...
95.0	...	...	69.4	...	...	74.2	...	...	40.7	...	...

[1] Coca leaves not included in 1918 price computations.

With the object of indicating in a comparative way the effect of war conditions on drug imports and prices, a table (Table I) has been prepared showing the imports (in thousands of pounds), declared value per pound, and wholesale price of selected grades (from averaged quarterly quotations in the *Oil, Paint and Drug Reporter* for the fiscal years 1913, 1914, 1915, 1916, 1917 and 1918), of eighteen well-known drug products—aloes, buchu, cinchona, coca, ergot, gentian, ipecac, jalap, licorice, nux vomica, opium (crude), opium (powdered, etc.), orris, rhubarb, sarsaparilla, senna, tragacanth, and vanilla. These products have been selected as the most important items on which import statistics are available; it is unfortunate that no Commerce and Navigation statistics are available for most other products, or even, in amount, for drugs or crude drugs as a whole. Amount of imports of these commodities for the years 1914–1918 are shown to be, respectively, 84.4%, 80.2%, 58.5%, 62.5% and 34.3% of those for 1913. During three-quarters of the last pre-war year, 1914, increased or new tariff duties were in effect upon buchu, coca, ergot, gentian, licorice, opium, sarsaparilla, and vanilla. Imports of these commodities, with the exception of buchu, gentian, and crude opium, showed a marked falling off from the figures of 1913, as did, indeed, several other products not affected by the tariff.

If 1914 be taken as a base, the percentages shown by the four war years are 95%, 69.4%, 74%, and 40.7%, respectively.

The total average cost of a pound each of these widely varying items since 1913 has shown increases only in two years, 1917 and 1918, of 14.4 percent and 72.5 percent, respectively. To the buyer's cost, however, must be added new and increased duties on several of the products effective October 1, 1913. Without enumerating these specifically, it may be said, for the dutiable products listed, the total increase over the tariff of 1909 amounts to a trifle over $4.00. As these duties applied during only a portion of the year 1914, an amount proportionate to that period of the year has been added in making up the buyer's total. As this tabulation is chiefly concerned with recent factors affecting trade, previous tariff rates (Act of 1909) have not been included.

These increases bring the cost of 1913 and 1914 to virtual equality. Other increased costs are represented by increased freight rates, insurance, cost of labor, etc. Unfortunately, these cannot be included in this tabulation.

It would be interesting to compare the cost price, in so far as it is represented by the invoice cost plus increased duty, with the wholesale price, but this cannot be done exactly, as two or more grades of these commodities are usually quoted. An approximation may, however, be made by using for this purpose the most common grade or, in the case of widely variable items, like vanilla, one which seems to represent an approximate mean of the prices of the chief varieties. An increase of wholesale price on selected grades over the 1913 price is noted in every year save 1914; in 1917 the wholesale price is 113.1 percent above that of 1913, while the invoice cost plus increased duty for the commodities as a whole has increased but 34.6 percent. For that year (1917) wholesale prices on several grades are 96.9% above the invoice cost plus duty, while in 1913 the difference was but 24.1 percent and in 1914 only 17.2 percent.

The year 1918 witnessed a further drastic cut of imports, which amounted to only 34.3 percent of those of 1913. While all commodities showed the effects of the war, this large percentage decrease is chiefly due to import restrictions and other adverse conditions affecting the largest import of all—licorice root. During that year coca leaves remained strictly nominal on the American market; while imports were even larger than the average of previous years, presumably no supplies reached the open market. In the 1918 price computations, therefore, its commodity has not been included. Excluding coca leaves, the total price of the given grades was no less than 185.2 percent above that of 1913, and 76.1 percent above the invoice-plus-duty price, the latter being, however, 93.5 percent above 1913.

The shortage of certain supplies of crude drugs has proved a considerable stimulus to drug cultivation, both in America and elsewhere. Numerous publications regarding drug cultivation have appeared in various journals, and the subject may be here only briefly referred to. The principal drugs now cultivated in America include belladonna, digitalis, cannabis, hyoscyamus, and others. Of foreign nations, Japan has perhaps most rapidly taken up drug cultivation. Japan now furnishes us considerable supplies of matricaria, castor beans, mustard seed, and valerian. Most striking, however, is her rapid increase in exports of insect flowers. Prior to the war, this product entered the United States chiefly from

Europe, in amounts insufficient to receive mention in Commerce and Navigation statistics. In 1917, over 1,500,000 pounds were imported, mostly from Japan.

War conditions, of course, soon made themselves felt in sources and routing of supplies. Where formerly the major portions were transshipped through the drug markets of Hamburg, London, Amsterdam, Antwerp, and Marseilles, now much of the dealing was direct. Shipments began to arrive from little-known ports of or near the country where the materials were gathered and importers were forced to adjust their business methods to the changed conditions. As existing stocks of the remaining accessible middlemen decreased, more and more new direct connections had to be established with dealers in small, oftentimes, remote places. Goods began to be received in smaller lots, partly because small dealers at difficultly accessible points could not accumulate larger amounts before filling orders, and partly because the ever-widening influence of the war and the insistent demands of war-born industries called labor, especially agricultural labor, to other tasks more remunerative than the gathering of drugs. The collection of such products, frequently in the hands of ignorant or uneducated persons, naturally has suffered. Many of the collectors in the older collecting regions no doubt are unused to such pursuits, and in their inexperience they are apt to collect material carelessly or to dry it improperly. Such conditions are even more apt to obtain in regions where crude drugs have not hitherto been collected. Other errors may probably be attributed to the fact that merchants unfamiliar with and unequipped to handle drug products have undertaken to supply much desired articles.

Adulteration has taken chiefly two forms—the collection of authentic material of poor quality and the collection or addition of spurious material. In general, we are of the opinion that intentional sophistication is comparatively rare, although cases do occur occasionally. It is hard to believe, for instance, that decorticated cardamon seed, containing pebbles which simulate the appearance of the seeds themselves, is not an example of intentional adulteration, although the seeds of certain closely related *Amomum* species, which have also been observed in small amounts, are very possibly accidental. As a further example of unquestionable wilful adulteration may be mentioned "aniseseed" containing up to 75 percent of exhausted fruits; but most surprising of all was a shipment of aspidium, the bales of which contained alternate layers of old worthless material and fresh, newly-gathered material of strictly U. S. P. quality. The exporter had of course taken the precaution to place some of the latter at both ends of the bales.

The low quality of some material offered for entry is no doubt due to careless collection; instances of this type are insufficiently washed roots—sarsaparilla, dandelion, valerian; leaves containing excessive stems—buchu, sage, senna, thyme; seeds containing chaff, stems and other foreign material—mustard, poppy, staves-acre, etc. Under this class also must be placed moldy goods; it is hard to find shipments of areca nuts and nutmegs free from mold. African ginger is another bad offender, and the same is true of ergot and orris root.

With regard to the offering of wholly spurious material, we are of the opinion that this also may be accidental, as well as intentional. Oftentimes medicinally unlike drugs have a somewhat similar appearance and may be mistaken for the true material by an ignorant collector, a case in point being *Eupatorium glutinosum* Lamarck, which has been offered as matico. In some instances, where the ap-

pearance of the adulterant is so unlike that of the true material that no confusion could possibly arise, it would seem that the collector had found something apparently as valuable for similar purposes as the true material and offered it as such; *Macrotomia cephalotes* D. C., which has been offered as alkanet is an example of this type. Thus it happens that spurious material which arrives may not be without value. Oftentimes, however, it is worthless, and the importer who may perhaps have been compelled to accept a sight draft with the bill of lading, is unfortunately subjected to an unpreventable loss.

These rapidly appearing new products are a source of never-ending interest and oftentimes joy to one interested in the botany and chemistry of drug plants and new sources of drug supplies, and it is chiefly to some of these products that we wish to call your attention in somewhat greater detail, perhaps, than can be accorded them in the more impersonal Service and Regulatory Announcements of the Bureau of Chemistry.[2,3] Judging from data at present available, these products may be divided into five classes, as follows:

I. Material containing toxic foreign matter.
II. Material of value as substitutes for recognized products.
III. Material unsuitable for use as substitutes for recognized products, but valuable for other purposes.
IV. Material of uncertain value, requiring further study.
V. Material of no known value.

Class I.

Caraway.—Several shipments of caraway have been offered for importation which contained a considerable number of fruits infected with a fungus-like growth resembling ergot. Although no information was available as to whether this type of fungus was as poisonous as the common ergot occurring on rye, the Bureau considered it of such a character that the importation of the shipment was not permitted until the objectionable material was removed.

Cumin.—One shipment of cumin, offered for importation, also contained fruits more or less attacked by the same fungus.

This ergotlike fungus can be readily detected, even in fruits only slightly infected, with the chitin test described in considerable detail by one[4] of the writers.

Marjoram.—In quite a number of instances the leaves of *Coriaria myrtifolia* have been found in shipments of marjoram, some samples containing as high as 8 percent. The leaves of the *Coriaria* had been so finely cut as to destroy any resemblance to their original form, which leaves no doubt that the adulteration was intentional. According to Kobert[5] and Schmiedeberg,[6] the adulterant mentioned contains a poisonous principle, *coriamyrtin*, which is similar in action to picrotoxin. A fatal case of poisoning as a result of eating omelets garnished with *Coriaria* sprouts is reported in *Bull. de Pharm. de Sud-Est*, 1910, 29 (through *Apoth. Ztg.*, 1910, 455).

A quick, rough test to detect this adulterant in marjoram follows: Place about a gram of the sample in a 6-inch porcelain dish, add about 200 cc. of water, and finally add about 5 drops of a 10 percent iron chloride ($FeCl_3$) solution. A light yellowish green color of the liquid is produced by pure marjoram, but when *Coriaria* is present the color becomes a decidedly darker dirty green, the intensity naturally depending upon the amount of *Coriaria* present and the time

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[2] S. R. A., *Chem. Index*, (1–22), 1918; S. R. A., *Chem.*, 23, 1918.

[3] The botanical work herein reported was largely done by or with the help of Mr. J. F. Clevenger.

[4] A. Viehoever, "On the Detection of Mold in Drugs, Foods, and Spices, with Special Reference to a Specific Stain," THIS JOURNAL, 6, 518–24 (521), 1917.

[5] *Lehrbuch der Intoxikationen*, 1906, 1095.

[6] *Pharmakologie*, 1909, 286.

of standing. The coloration is due to the presence of a large amount of soluble tannin. After standing a few minutes the edge of the particles of *Coriaria* leaves become conspicuously blackened and can be picked out readily. These particles are entirely flat, distinctly thicker than the leaves of marjoram, somewhat glabrous, and have a brighter green color. Of especial importance in distinguishing them from marjoram is the absence of hairs and the fact that surface sections of these leaf particles show striations of the epidermal cells, this latter characteristic being especially pronounced in those cells immediately surrounding the stomata.

Senna.—An adulteration of senna which was reported in literature as long ago as 1836[7] is *Tephrosia appolinea*. Of late years, however, its use for this purpose appears to have been discontinued and no mention is made of it in recent literature. We were very much surprised, therefore, to find it again in several importations of senna leaves. The leaves are obovate, often obcordate, and may, furthermore, be distinguished from senna by their smaller size and pinnate venation. The fruit pods, which are 2 to 3 cm. long and about 3 mm. wide, are also of service in detecting this adulterant. A number of *Tephrosia* species have been reported to contain a toxic glucoside, *tephrosin*, and to have been used as fish poisons. Senna containing this adulterant was denied admission.

Class II.

Aconite.—The most important product which has been imported for aconite is the so-called Japanese aconite (*Aconitum fischeri Reich*). The material which generally consists of mother tubers (with stem bases) and daughter tubers (with buds) may be distinguished macroscopically from the official aconite (*Aconitum napellus L.*) by their much smaller size and weight, less wrinkled and not twisted appearance, more or less short, conical shape, generally more mealy condition, and microscopically by the different arrangement of the fibro-vascular bundles, which are usually not so markedly star-shaped. According to Makoshi[8] they contain no aconitine but either japaconitine, possibly an isomer of aconitine, or jesaconitine. He reports both alkaloids to have a physiological action similar to that of aconitine and that they may, in fact, be even more active.

Since the daughter tubers are considered by some authors to be more desirable, and are specified by the Swiss, German and Belgian pharmacopoeias, an examination was made of the Japanese aconite to determine the relative amounts of ether-soluble alkaloids in both mother and daughter tubers. The following results were obtained:[9]

	Composition.		Alkaloids present.		
Sample.	Mother.	Daughter.	Mother.	Daughter.	Whole sample (calculated).
1.....	72%	28%	0.41%	0.46%	
			0.40%	0.45%	
			Av. 0.405%	Av. 0.455%	Av. 0.42%
2.....	59%	41%	0.32%	0.49%	
			0.33%	0.49%	
			Av. 0.325%	Av. 0.049%	Av. 0.39%

The analyses showed that while in general the daughter tuber was superior to the mother tuber, the alkaloidal content of both was below the U. S. P. requirement for *Aconitum napellus*. In connection with this product the interesting statement is made by Zörnig[10] that Japanese aconite has been favored by manufacturers of extracts of aconite, since it contains very little resinous matter. *Aconitum napellus*, however, is the only species of aconite official in any country so far as we can find, including Japan.

Another species recently substituted for aconite is *Aconitum chasmanthum* Stapf., an Indian species.[11] We feel, however, that the name Indian aconite should not be applied to it since the principal variety of Indian aconite is *Aconitum ferox* Wall., to which the term is generally

[7] *Annalen der Pharm.*, 1836, 94–8.
[8] *Archiv. de Pharm.*, 1881, 3, 47, 177.
[9] *Analyst*, M. G. Mastin.
[10] *Die Arzneidrogen*, 1909, I, 659.
[11] Identified by C. J. Zufall.

referred. *Aconitum chasmanthum* is generally smaller than the official aconite, being about 2 cm. long and about 0.75 cm. in diameter; it is less wrinkled and the rootlet stubs are usually clustered at the basal end. Its fracture is lighter in color and its texture less tough and resinous.

With regard to the alkaloidal content, Dunstan and Andrews[12] state that it "contains indaconitine, an alkaloidal intermediate between aconitine and pseudaconitine." Cash and Dunstan[13] have pointed out that its physiological action differs in degree only, and not in kind, from these alkaloids. They state "Indaconitine . . . . . may therefore be substituted for aconitine and pseudaconitine for internal use, indaconitine being administrable in the same dose as aconitine." The sample in question contained about 0.7 percent of ether-soluble alkaloids.[14] Of interest are also the results of Frazer's experiments, who compared the action of official aconite with that of other aconites native to India.[15]

Alkanet.—A specimen offered for entry as "Alkanet" proved, upon examination, to be the root of *Macrotomia cephalotes* D. C., so-called "Syrian Alkanet." It is much larger than the genuine alkanet, *Alkanna tinctoria* Tausch.; it occurs in pieces from 20 to 40 cm. long and from 2 to 5 cm. thick, whereas alkanet is about 1 to 1.5 cm. in diameter and is usually 10 to 15 cm. in length. It is black-violet in color and somewhat metallic in appearance, whereas alkanet is of a dull maroon color. It has a distinctly spiral twist, resembling a twist of tobacco, whereas alkanet is only slightly twisted.

Chemical examination showed it to contain about 9 percent of an extract very similar to that of true alkanet, which is considerably more than is generally reported in true alkanet (5 or 6 percent). The coloring extract, as is also true in the case of alkanet, consists of at least two chemical individuals, and both extracts appear to be very similar in nature. In view of the fact that in the so-called "Syrian Alkanet" the extract was much larger in amount than in true alkanet, and possessed equivalent tinctorial strength, it would appear to be a valuable substitute for the latter. An extract prepared with 95 percent alcohol, diluted with water to about 50 percent concentration of alcohol, gave very satisfactory results in the Pharmacognosy laboratory and in the Microbiological laboratory of the Bureau of Chemistry in the staining for microscopic observation of sections containing fats (soya beans, castor beans, yellow mustard seed, etc.) and resins (podyphyllum rhizome and white bryony root).

Further details regarding this interesting product have recently appeared in the Journal of this Association.[16]

Buchu.—The official species of buchu are commonly known as "Long" buchu (*Barosma serratifolia* (Curtis) Willdenow), and "Short" buchu (*Barosma betulina* (Thunberg) Bartling and Wendland). A non-official species which has recently appeared on the market is the so-called "Oval" buchu (*Barosma crenulata* Hook. var. *latifolia*). The odor of the leaves is strong and even more agreeable than that of certain samples of the official species that we have examined. It is of interest in this connection that the Japanese Pharmacopoeia recognizes the leaves of *Barosma crenulata* as buchu leaves. While data obtained by Schimmel & Company[17] indicate that the volatile oil separated from *Barosma crenulata* contains small amounts of diosphenol (buchu camphor), it is different from those of the official species.

Two other adulterants which, however, do not appear to be of value as substitutes for buchu are *Empleurum serratulatum* Sol. and Ait., offered as "Long buchu," and *Barosma pulchellum* Bartl. and Wendl., offered as "Short buchu." The sizes of the leaves are distinctly different from those of the official species. The aroma of *Empleurum serratulatum* and *Barosma pulchellum* is distinctly different from that of the official species. We have as yet been unable to make any extended examination of the volatile oil of *Barosma crenulata* Hook var. *latifolia*, which appears to be the most promising of the three products.

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[12] "Contribution to Knowledge of Aconite Alkaloids," *Trans. Chem. Soc.*, 87, 1620–36, 1905.

[13] *Proc. Roy. Soc.*, 1905), 468.

[14] *Analyst*, S. Ginsburg.

[15] "A Contribution to the Pharmacology of *Aconitum heterophylloides*, *A. nagarum* and *A. napellu,s*" *J. Pharmacol. and Exp. Therap.*, 9, 43–56, 1917.

[16] Ewing and Clevenger, "So-called 'Syrian Alkanet,' *Macrotomia cephalotes* D. C.," THIS JOURNAL, 7, 191–4, 1918.

[17] *Semi-Annual Report*, October 1911, 23.

Coriander.—Some importations of coriander seed have consisted of fruits differing in physical appearance from the Pharmacopoeial description. They are larger, have a more oval appearance, and in general yield less volatile oil than the pharmacopoeial article. Growing experiments are being carried on to determine their botanical source. At present we are unable to state whether they belong to a distinct species or are merely a variety of the official *Coriandrum sativum* L. The product appears in the trade as Bombay or Indian coriander and appears to have value. One sample yielded about 0.2% of a volatile oil having a specific gravity at 25°/25° of 0.8726, optical rotation (100 mm. 23°), 12.73°.[18] The oil contained over 50 percent of coriandrol, and also a very small amount of citral. No pinene was detected with the small amount of oil available. The oil complied with the U. S. P. requirements for oil of coriander, and is apparently somewhat similar in composition.

Horehound.—In quite a number of instances the young herb of *Ballota hirsuta* Benth. has been substituted for true horehound, *Marrubium vulgare* L. The material is very closely related to horehound and resembles it so closely in appearance that it is difficult to point out striking macroscopical distinguishing characteristics. With the hand-lens or microscope, however, the following characteristics are noted:[19]

(1) The tufted hairs of the leaves of *Marrubium vulgare* are usually curved or bent and almost sessile; those of the leaves of *Ballota hirsuta* are usually straight and are somewhat elevated by a multicellular basal stalk.

(2) The calyx of *Marrubium vulgare* has long, recurved, subulate teeth, while that of *Ballota hirsuta* has shorter, acute or obtuse teeth.

(3) The hairs of the inner surface of the calyx of *Ballota hirsuta* contain crystals probably consisting of calcium oxalate; those of *Marrubium vulgare* do not.

We have been unable to find any chemical data regarding *Ballota hirsuta* and have as yet not found an opportunity to study it ourselves. However, the similarity of the two species was so striking that a small amount of candy was made from an infusion of the material. The flavor was not at all unpleasant, and very closely resembled that of horehound. When larger amounts of the material are available it will be interesting to determine the nature of the volatile oil and to ascertain whether or not the bitter substance which is present consists of marrubiin, the bitter principle of horehound.[19]

Hyoscyamus.—Within the past two years there have been increased offerings of *Hyoscyamus muticus* which, although unsuitable for use as a substitute for *Hyoscyamus niger*, appear nevertheless to have considerable commercial value. It appears that this species, especially plants grown in Egypt, contain considerable amounts of hyoscyamin in a form which can easily be obtained in the crystalline state. It is reported not to contain scopolamine, the other active principle of the official *Hyoscyamus niger* L. It may be distinguished from *Hyoscyamus* by its characteristic branching non-glandular hairs, which occur on both stems and leaves.

Jalap.—A very interesting product which has lately appeared on the market is Piptostegia root (*Piptostegia pisonis* Mart.), sometimes called "Brazilian Jalap" The material is related to true Jalap, *Exogonium purga* (Wenderoth) Benth. It may readily be distinguished from true jalap in that it occurs in commerce in the form of transverse circular or oval sections, varying from about 3 to 8 cm. in diameter and from about 0.3 to 0.8 cm. in thickness. The pieces are marked with several concentric rings, and aside from the pale grayish brown tint and the presence of numerous dots of translucent, pale resin on the surface, bear considerable resemblance to commercial white bryony root. True jalap tubers generally occur in the whole state. The material contains up to 20 percent or more of an active purgative resin which, however, is unlike the resin obtained from true jalap. This product has been recently described at somewhat greater length in the journal of this Association.[20]

Licorice Root.—One of the crude drugs in largest demand at the present time, the supplies of which have been very adversely affected by the war, is licorice. This product has heretofore

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[18] *Analyst*, J. F. Darling.

[19] For further details see Ewing and Clevenger, "*Ballota hirsuta*, an Adulterant of Horehound," THIS JOURNAL, 8, 273–275 (1919).

[20] Ewing and Clevenger, "Piptostegia Root (*Piptostegia pisonis* Mart, So-called 'Brazilian Jalap),'" THIS JOURNAL, 1918, 855–95.

been largely supplied through Spain and Russia. At the present time, however, supplies of a new species are also being received from Asia. The material was obtained from *Glycyrrhiza uralensis* Fischer, known as "Asiatic Licorice" (Chuntschir licorice). According to the literature, it contains about the same amount of glycyrrhizinic acid as Spanish and Russian licorice. When tested by the U. S. P. method it yielded 27 percent of extractive to hot water, which is considerably in excess of the U. S. P. requirement of 20 percent. The samples that we have observed were for the most part of good quality, and the material appears to be a valuable commercial product.

Sage.—The foreign supplies of true sage, *Salvia officinalis* L., have been very largely shut off and the material now being offered consists of Greek sage, *Salvia triloba* L., and Spanish Sage, *Salvia lavandulaefolia* Vahl. *Salvia lavandulaefolia* is official in the Spanish pharmacopoeia, as well as *Salvia officinalis*. Tschirch[21] expresses the opinion that it may be only a variety of *Salvia officinalis*, namely, *Salvia officinalis* var. *hispanica* Boiss. It has an agreeable odor but is somewhat camphoraceous, and for that reason will probably find less commercial demand than Greek sage, which resembles in flavor very much the true sage.

These forms, while very closely related to true sage, differ in appearance and flavor and are well recognized by the trade as distinct forms. Greek sage may be distinguished from true sage by the usually broader, shorter, thicker, entire leaves, short petioles, and by its more wooly appearance. Spanish sage may be distinguished by its smoother, considerably smaller, entire leaves and relatively long petioles; neither Greek sage nor Spanish sage possesses the crenulate edge and the strong venation characteristic of true sage.

Scammony.—True Scammony, *Convolvulus scammonia* L., appears to be no longer available in commercial quantities, and it seems probable that the product now listed as scammony in the trade journals is really Orizaba root, *Ipomoea orizabensis* Ledanois, sometimes improperly called "Mexican Scammony." This product contains an active purgative resin in larger amounts than true scammony, and has of late been imported from Mexico in large quantities. It appears to be a valuable product and no doubt will secure for itself an important place in our materia medica.

Heinrich[22] has recently shown that the active portions of Orizaba-resin, Jalapin, and of Jalap-resin, Convolvulin, are glucosidic substances with saponin character. Of the two, Jalapin was more strongly hemolytic.

Tragacanth.—A material which has come upon the market in considerable quantity within the last few years is Karaya gum, sometimes invoiced as Kadaya, Maura, Shiraz, or Indian gum. The last name, however, has been applied to other gums of India, and we do not consider it a proper name for this material. Karaya gum is obtained chiefly from *Sterculia urens* Roxb. and *Cochlospermum gossypium* D. C., and also from other closely related species of *Sterculia* or *Cochlospermum*. It occurs in irregular, rounded, translucent lumps of a pale buff color; it is said never to occur in the ribbon-like, whitish or light brown bands characteristic of true tragacanth. Its presence may be detected by U. S. P. IX tests for the purity of gum tragacanth, where it is referred to in a number of tests as Indian gum. It appears to have certain valuable properties[23] and has already found application in a number of ways as a substitute for tragacanth, although there is no doubt but that it is inferior to the official drug.

Class III.

Belladonna.—A notable feature about a shipment of 3 bales of belladonna leaves recently offered for entry was that two bales consisted of genuine material, while the other consisted of the leaves of *Solanum nigrum* L. The substitution of this plant for belladonna may be due to the fact that the common names of the plants are similar, belladonna being called Deadly Night Shade, and *Solanum*, Black Night Shade, and sometimes, erroneously, Deadly Night Shade. Since this species contains solanine, and not atropine, it is not a suitable substitute for the official drug.

Mustard.—The mustard situation since the cutting off of European supplies has been exceedingly acute and has resulted in great stimulation of the importation of Oriental and Indian

[21] *Handbuch der Pharmakognosie*, 1913, II, 1024.

[22] Heinrich, "Biological Behaviour of Convolvulin and Jalapin," *Biochem. Zeitschr.*, 38, 13–34, 1918.

[23] Ewing, "Karaya Gum, an Adulterant of Tragacanth," THIS JOURNAL, 7, 787–90, 1918.

species. A number of these have proven of value, but others appear to be unsuited for use as mustard substitutes. Of the latter, the most noteworthy has been Chinese colza, *Brassica campestris* var., *sativa annua chinensis* Lund and Kiaerskou, *Brassica chinensis* L.[24] and Indian tori, *Brassica napus* var. *dichotoma*. An examination of Chinese colza showed it to contain on the average about 0.4 to 0.5 percent of a volatile oil of different character than that obtained from the official species, *Brassica nigra*. It had an odor more nearly resembling that of cabbage and did not have the typical mustard oil effect upon the eyes and nose, nor did it blister the skin. In general, the Chinese colza more nearly resembled the rapes than the mustards; this was also true of the Indian tori. The former is of value as greens and both are valuable as forage and oil seed crops. Two products, however, have proven to be of value as mustards—Chinese mustard, *Brassica juncea* L., and Japanese mustard, *Brassica cernua* Thunberg, a variety of *Brassica juncea;* both of these have properties similar to the official *Brassica nigra* L. Koch. Studies of these products are at present under way.

Class IV.

Chamomile.—A crude drug product which is generally imported in large amount is German chamomile flowers (*Matricaria chamomilla* L.). The usual sources of supply having been largely shut off, this product has been subjected to considerable adulteration, the most noteworthy adulterant perhaps being flowers of dog fennel, *Anthemis cotula* L. This adulterant has been found in amounts as high as 25 percent, or more. It is fairly closely related to *Matricaria* and some of the chemical data in the literature suggest that it possibly might have somewhat similar properties. As a matter of fact, it was recognized in the U. S. Pharmacopoeia from 1820 to 1880. It is possible, then, that it may not be without value, but appears to be inferior to German chamomile, and it is obvious that it is improperly offered and sold as such.

Another adulterant of German chamomile which has been offered for importation is the flower heads of wild Roman chamomile, *Anthemis nobilis* L. This adulterant also resembles somewhat German chamomile. The flowers which are said to have been obtained from wild growing plants have only one row of ligulate florets, the whole of the disk florets being yellow and tubular. Flowers of this type are called single chamomiles; double chamomiles, which are the familiar form, are the cultivated flowers in which all or nearly all of the yellow tubular florets have become converted into ligulate ones. The latter were official in the U. S. P. VIII. They are larger and whiter and are commonly preferred by the trade, although the tubular florets of the wild plants are more odorous and somewhat more bitter than the ligulate ones, and are said to have the most powerful medicinal properties.[25]

It appears that this substitute also may not be without value, inasmuch as it seems, from the information available, that the material contains the same active constituents as the cultivated variety formerly official. It is obvious, however, that if used it should be offered and sold as "Wild Roman Chamomile." The flowers of both adulterants have solid chaffy receptacles, whereas those of *Matricaria chamomilla* have naked, hollow receptacles. Both substitutes may be readily detected by these means.

Couchgrass.—Bermuda grass (*Cynodon dactylon* L.), has been substituted quite frequently of late for true Couchgrass (*Agropyron repens.*). Considerable work has been done on the chemical properties of *Agropyron repens*, and two glucosides, one a vanillin glucoside, and the carbohydrate *triticin*, have been isolated. In an early work[26] *cynodon* is reported as an active substance, occurring in the rootstock of *Cynodon dactylon*. Tschirch[27] considers *cynodon* as identical or similar to asparagin. We understand that Bermuda grass has been used in the southern part of Europe for similar purposes as couchgrass in central Europe, and it is reported as occurring in the trade under the names *Rhizoma cynodontis, Rhizoma Graminis italici*, or *Rhizoma Graminis dactyli*. The lack of starch and the considerable size of the endodermis cells characterize the rootstock of *Agropyron repens*, while the rootstock of *Cynodon dactylon* contains considerable

[24] Viehoever, Ewing and Clevenger, "Studies on Brassicas I. Chinese Colza (*Brassica campestris* var. *chinensis Toleifera m. f.*)" (unpublished manuscript).

[25] Bentley and Tridelemen, 3. 154, 1880.

[26] Semmola, *Chem. Jahrsb.*, 1845, 535.

[27] *Handbuch der Pharmakognosie*, 2, 223, I, 1912.

starch and smaller endodermis cells. Comparison with *Agropyron repens* rootstocks furthermore shows that the rootstocks of *Cynodon dactylon* have thinner, longer scales, often, or usually pubescent.

Digitalis.—In a number of instances *Digitalis thapsi* L. has been offered for *Digitalis purpurea* L. This substitute grows wild in Spain, as does also *Digitalis purpurea*, which is quite similar to it. It may be distinguished by the hairs, which are of one sort, glandular, long, stalk, several-celled, with 1- or 2-celled glandular head, whereas the hairs of *Digitalis purpurea* are of two sorts, usually long, simple, 2-8 celled, some cells frequently collapsed, glandular hairs few, much shorter, with 1- or 2-celled stalk and 1- or 2-celled glandular head. A notable fact regarding the samples we observed was the somewhat yellowish tint, due perhaps to faulty curing or storage.

So far as we are aware, *Digitalis thapsi* is not recognized in any pharmacopoeia. Experiments reported in the literature[28,29] indicate that it has considerable activity, but it has also been intimated that the pharmacological action is not identical with that of *Digitalis purpurea*. Since, however, the drug appeared to be worthy of further investigation, plants for this purpose were planted in March, 1917.

Class V.

Arnica flowers.—A large number of samples offered for import as "Arnica flowers" have been found to consist of the flower heads of *Inula britannica* L. The ligulate flowers are considerably smaller in length and width than those of the true arnica flowers, *Arnica montana* L. The veins in the ligulate flowers of *Inula britannica* number 4, while 7 to 12 are reported in the literature for arnica flowers. The young achene (undeveloped fruit) is 1 mm. long, whereas that of arnica is 5 to 7 mm. in length. The receptacle is smooth in *Inula britannica* but hairy in true arnica. An abundant pappus is developed in both species, which is the cause of a somewhat similar appearance of the two products.

Nothing appears to be known as to the chemical constituents of this product. It is not official in any pharmacopoeia, and its medicinal value is not known.

Dandelion Root.—In several instances a root, possibly that of a species of *Lactuca* or *Sonchus*, has been substituted for the root of *Taraxacum officinale* L. The adulterant is characterized by its tracheae, which are arranged in radial rays usually one cell wide, alternating with medulary rays two or three cells wide. We have been unable to find any data regarding the chemistry of this adulterant, and, as far as we are aware, it does not appear to be a suitable substitute for dandelion root.

Fennel.—Several shipments of fennel seed have proven, upon examination, to be the fruits of wild fennel, *Foeniculum piperitum* Sweet. The fruits are small and their flavor is distinctly inferior to the official fennel *Foeniculum vulgare* Miller. This species is not cultivated and may be distinguished from *Foeniculum vulgare* by its very much smaller size and the decidedly bitter taste and flavor of its volatile oil. The inferior quality is especially noticeable when an examination is made of the distilled volatile oil.[30] From the data available, this product appears to be an unworthy substitute for the U. S. P. article.

Ipecac.—The increased demand for ipecac has resulted in the offering of quite a number of other materials under this label. Among these are *Heteropteris pauciflora* Juss., *Ipecacuanha fibrosa* and an *Ionidium* species. True ipecac has calcium oxalate raphides, numerous starch grains and contains no groups of bast fibers in the cortex. *Heteropteris pauciflora* contains no starch and has a normal wood structure; stone cells and calcium oxalate rosettes are present in the bark. The *Ionidium* species contains no starch; small stone cells, when present, occur in the bark, as do also prismatic crystals of calcium oxalate. *Ipecacuanha fibrosa* may be differentiated by the presence of groups of bast fibers arranged tangentially. None of these adulterants, as far as we are aware, are mentioned in any pharmacopoeias, nor do they contain the active principles of the official drug.

Matico.—*Piper angustifolium* Ruiz et Pavon. is another product which has been much adulterated. In some instances the leaves of a closely related *Piper* species, *Piper bredemeyri*

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[28] Holmes, "Spanish Digitalis," *Pharm. Jour. and Pharm.*, (ser. 4), 1917, 351, 399.

[29] Farwell and Hamilton, "*Digitalis thapsi* L," *Am. Journ. Pharm.*, 1917, 147–154.

[30] *Analyst*, H. B. Mead.

Jacq.,[31] have been substituted, and these, no doubt, may have a limited application as a substitute for matico. One shipment, however, upon examination, proved to be obtained from an altogether unrelated species, *Eupatorium glutinosum* Lam. At first glance the adulterant has an appearance somewhat resembling matico, due to the fact that both species have leaves glabrous and coarsely bullate on the upper surface, but comparison with authentic material readily discloses obvious differences. The leaves of *Eupatorium glutinosum* pack together in rather a gummy, spongy fashion, and are much less brittle than those of the recognized matico. The leaves of matico are alternate, entire, mostly sessile, and are pubescent on the lower surface, whereas those of the adulterant are opposite, serrate, have a petiole one-half to one inch long, and are very wooly on the lower surface. The flowers, a few of which are generally present, offer further means of identification; those of matico occur in long spikes, while those of the adulterant occur in cymosepaniculate composite heads. The material yielded about 0.15 percent of a volatile oil resembling that of boneset, *Eupatorium perfoliatum* of the National Formulary. This adulterant has previously been described in somewhat greater detail in THIS JOURNAL.[32]

Stramonium.—In a number of instances importations of "Stramonium leaves" have been found to consist of the leaves of cockle bur, *Xanthium strumarium* L.[33] The leaves have about the same size and appearance as stramonium leaves, and the fruit also is covered with small thorns which simulate somewhat the fruit of stramonium. They differ, however, from stramonium leaves in that they are dentate and pubescent at the margin; under the microscope they show short tricellular hairs which enclose calcium carbonate crystals, as well as other small 7-celled hairs. Calcium oxalate crystals are absent in the leaves of the cockle bur, whereas they are abundant in stramonium leaves. Examination of the material showed the absence of the alkaloids characteristic of the genuine drug. The material therefore is not a suitable substitute for stramonium.

The foregoing[34] represent only a portion of the many interesting products which have come to our attention during the past several years, but will, we hope, serve to give an idea of the influence of the war upon the character of drug importations, and also an idea as to the nature of the work involved in the supervision of crude drug importations.

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[31] Viehoever and Mastin, "On *Piper bredemeyeri Jacq.* and its Value as a Source for Matico" (unpublished manuscript).

[32] Ewing and Clevenger, "*Eupatorium glutinosum* L. an Adulterant of True Matico (*Piper angustifolium* Ruiz et Pavon)," THIS JOURNAL, 7, 510–12, 1918.

[33] Identified by C. J. Zufall.

[34] Some of the substitutes to which we referred have within recent months been subject to further study:

Chamomile: Ballard, "Wild Anthemis—A Possible Matricaria Adulterant," THIS JOURNAL, 7, 952–54, 1918.

Couchgrass: Gathercoal, "Couch Grass *versus* Bermuda Grass," THIS JOURNAL, 8, 26–32, 1919.

Horehound: Youngken, "*Ballota hirsuta*, A Recent Adulterant of *Marrubium vulgare*," *Am. Journ. Pharm.*, 90, 147–56, 1919.

Jalap: Farwell, "Brazilian Jalap and Some Allied Drugs," THIS JOURNAL, 7, 852–55, 1918.

Marjoram: Beringer, "*Coriaria myrtifolia* as an Adulterant of Marjoram," *Am. Journ. Pharm.*, 90, 555–65, 1918.

Scammony: Scoville, "Scammony and Its Substitutes," *Journ. Ind. Eng. Chem.*, 11, 335–336, 1919.

Stramonium: Guérin, "Substitution of *Xanthium macrocapum*—for Stramonium Leaves," *Jour. pharm. chim.*, (7 ser.), 7, 102–5, 1919.

THE STRUCTURE OF BERMUDA GRASS COMPARED WITH THAT OF TRITICUM.

BY C. J. ZUFALL.

Because of the scarcity of European Triticum, a substitute, Bermuda grass has been imported in considerable quantities, although genuine Triticum is found growing abundantly in many sections of America, as well as in Europe. If the trade would realize that Triticum is Triticum whether gathered in Europe or in America, there would be less difficulty in securing enough for its needs. As in many other instances, we should declare our independence of Europe in obtaining our supply of this drug.

The substitute, imported under the name "Bermuda Grass," has been found mixed with Triticum and offered for sale as U. S. P. Triticum. Bermuda grass grows in Northern Africa and Southern Europe, where it is used in much the same way as Triticum.[1] It is also found naturalized in America, scattered through the fields and waste places from Massachusetts and Southern New York to Missouri, Florida, and Mexico, as well as in the West Indies and South America. In some places it is cultivated in pastures.[2]

The botanical origin of this adulterant is *Capriola Dactylon* (L) Kuntze (*Cynodon Dactylon* Pers.; *Panicum Dactylon* (L); *Digitaria stolonifera* Schrad; *Dactylon Officinalis* Vill.) The generic name, Capriola, comes from the mediaeval Latin name for the wild goat that feeds on this grass in rocky places. There are only four species in the genus, of which three are Australian, while *C. Dactylon* is widely distributed.

Some of the common names for *Capriola Dactylon* (L) are Scotch grass, Scutch grass, Dog's-tooth grass, Indian couch grass, Bahama grass, Hundzahn, Gros Chiendent, or Chiendent pied-de-poule (French).

Capriola Dactylon is a perennial grass with short, flat leaf-blades, one to two inches long, and one to two lines wide. The blades are rigid, smooth beneath, and scabrous above. The smooth, glabrous culms are four to twelve inches tall, and erect, originating from long, creeping and branching stolons. The sheaths are glabrous or somewhat hairy, and crowded at the bases of the culms and along the stolons. The spikes are four to five in number, one-half to two inches in length, and digitate. The rachis is flat. The spikelets are one line long, one-flowered and secund.[2]

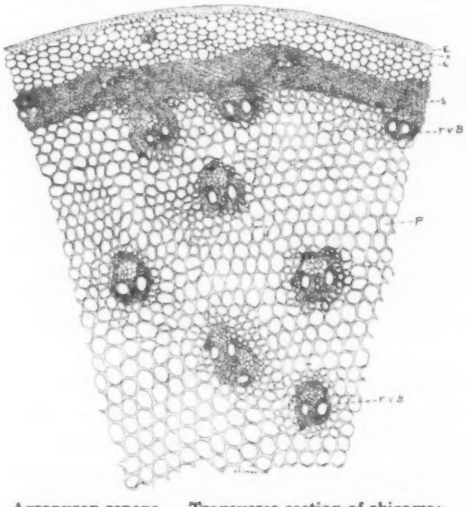
The dried rhizome of *Capriola Dactylon* is seldom less than two, and usually three millimeters or more in diameter, whereas the rhizome of Triticum is seldom more than two millimeters. The adulterant is generally hard and brittle, whereas Triticum usually is soft and pliable. Bermuda grass lacks the sweet taste of Triticum, and contains much starch.

In transverse section a hand lens or microscope shows that the structures of these two rhizomes are quite different. The epidermi beneath which are similar layers of hypodermal cells are similar. A marked difference is found in the cortex, that of Bermuda grass being about one-fourth as broad as that of Triticum. The cortex of Bermuda grass contains only one or two vascular bundles, whereas Triti-

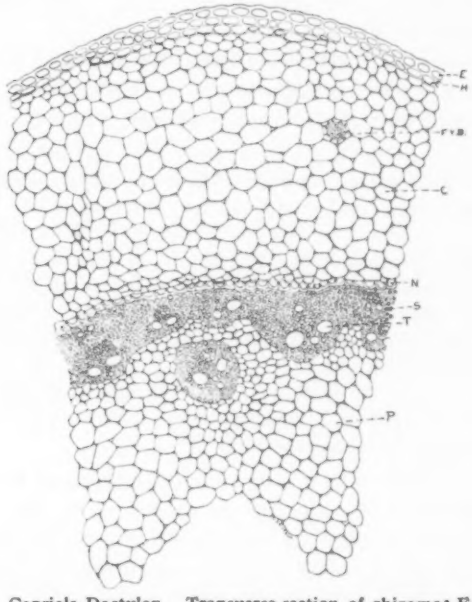
[1] Dragendorff, "*Die Heilpflanzen*," p. 85.

[2] Britton and Brown, "Illustrated Flora of the United States and Canada." Vol. I, p. 222.

cum contains six or seven. Bermuda grass has no endodermis, while in Triticum this layer is quite prominent, with the inner and lateral walls much thickened. The circle of bundles and the individual bundles of the one are much like those of the other. The pith of the Bermuda grass is from four to five times as broad as that of Triticum, and the walls of the pith cells, as well as the walls of the cells in the cortical parenchyma, are decidedly thicker than those of Triticum.



Agropyron repens. Transverse section of rhizome: E, epidermis; H, hypodermis; C, cortex; S, sclerenchyma tissue; P, pith; F. V. B., fibro-vascular bundle.



Capriola Dactylon. Transverse section of rhizome: E, epidermis; H, hypodermis; F. V. B., fibro-vascular bundle; C, cortex; N, endodermis; S, sclerenchyma tissue; T, trachea; P, pith.

Scattered through the pith of Bermuda grass are from thirty to thirty-five fibro-vascular bundles, while in the pith of Triticum there are only ten or twelve, and these are attached to the circle of sclerenchymatous fibres and bundles. In Bermuda grass the central hollow area is twice as broad as that of Triticum.

The powdered Bermuda grass may be identified by the presence of a large amount of starch, the thick-walled parenchyma cells and the absence of endodermal cells with the peculiar thick walls.

LIME, LIME WATER, AND LIME WATER TABLETS.*

BY ROBERT WOOD TERRY.

Lime water is not usually regarded as an important pharmaceutical preparation, but after serious thought it is seen to be one of the most important in the pharmacopoeia. Lime water is used pharmaceutically in preparing black wash and yellow wash, in the preparation of carron oil and, formerly, for preserving mucilage of acacia. If lime water is very deficient in its content of calcium hy-

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

droxide, which is not at all rare, serious injury may occur from the resulting yellow wash, as free mercuric chloride remains in the preparation.

Lime water is used internally as an antacid and to check nausea. Its principal use, however, is in infant feeding to modify the physical character of the paracasein curds from cows' milk, making the curds simulate the physical character of the paracasein curds of human milk. What pharmaceutical preparation should be purer than that which is given to infants in daily doses of from one to five ounces?

It is regrettable that lime water is so unstable and so little understood, since it is really so important. A few extracts from pharmaceutical literature will give a fair idea of the quality of lime water that is generally sold.

"Geo. E. Thum makes some practical observations on the preparation and preservation of lime water, operations which are usually conducted in the imperfect manner in which they have been conducted from time immemorial."[1]

"Pierce P. Bear, in view of the statement that not one sample in ten of lime water answers the pharmacopoeial requirements, examined fifteen samples obtained from different pharmacies. He found that not one of them answered all the requirements. Some were fairly good, but the majority were very poor, some containing scarcely any calcium hydrate and others considerable quantities of other soluble alkali. The results are shown in a table which may be consulted in the original paper."[2]

"Notwithstanding its cheapness and ease of preparation, much of the lime water dispensed by druggists is of inferior quality, due either to the use of a poor sample of lime or to insufficient care in preserving the liquid."[3]

The writer can see no objection to the use of lime water which has a small amount of calcium carbonate in it, the only difference being the formation of a small amount of carbon dioxide in the stomach. The practice of some druggists who dispense lime water containing undissolved calcium hydroxide is reprehensible and one that should be immediately stopped. Dispensing such lime water is chargeable to laziness, as lime water may rapidly be filtered. Small particles of calcium hydroxide are very liable to set up an irritation in baby's stomach. Calcium hydroxide is a caustic irritant.[4]

It is pleasing to note that in the last few years, since a high quality of lime has been marketed by certain manufacturers, the quality of lime water sold has improved. Unfortunately, not all druggists use this lime; some still cling to the old procedure of slaking builders' lime with ordinary tap water. This is so unethical and so great an injustice to the public that it need not be further discussed here. About twenty-five percent of the lime water sold to-day does not meet the pharmacopoeial requirements.

Lime water at its best is a poor pharmaceutical; its strength is seriously affected by temperature since it is a saturated solution. It is readily decomposed and reduced in strength by the action of air. It is a weak preparation, therefore, bulky.

TABLE A1.—COMMERCIAL AND PREPARED CALCIUM OXIDE.

No.	Directions.	Condition.	Carbonates.	Insoluble matter.	Chlorides.	Iron.
1	20 grammes to gallon	Good	Trace	Trace	None	Trace
2	.....[1]	Poor	Trace	Trace	None	Present
3	4 drachms to gallon	Good	None	Minute trace	None	None
4	Bulk CaO[2]	....	....	.....	....	....

[1] Sample No. 4 purified by U. S. P. IX process.

[2] Quicklime sold by wholesale druggist.

TABLE A2.—COMMERCIAL AND PREPARED CALCIUM OXIDE.—*Continued.*

No.	Heavy metals.	Arsenic.	Calcium oxide.	Alkalinity of 118 mils.[3]	Possible amt.[4]	Remarks.
1	None	Minute trace	99.28%	22.1 mils N/1 V. S.	585.7 mils	C. P. CaO
2	None	Minute trace	81.87%	18.3 mils N/1 V. S.	482.8 mils	
3	None	None	74.82%[5]	17.25 mils N/1 V. S.	346.3 mils	C. P. $Ca(OH)_2$
4	....	0.002%	.....	.....	.....	1 to 50,000 As_2O_3

Table "A1" shows results of a chemical analysis of two prepared limes, one bulk quicklime sold by a wholesale druggist for the preparation of lime water, and this same quicklime purified by the U. S. P. IX process. One of these prepared limes is a chemically pure calcium oxide, assaying 99.28 percent absolute CaO. The other is chemically pure calcium hydroxide assaying 99.83 percent absolute $Ca(OH)_2$. It seems more feasible to market these preparations in the form of hydroxide since, upon mixing with water, solution will be sure to be effected, as is not entirely the case if the oxide does not slake. Another argument is that of safety; it has been reported that one of these tubes, containing calcium oxide, exploded spontaneously, causing serious injury to the drug clerk who was handling it.

Chlorides and iron were tested for, not because they are toxic substances but they are an index to the degree of purity of the product and the care used in the manufacture. The quicklime sold by the wholesaler, Sample No 4, in Table A, contained 0.002 percent As_2O_3 or 1 part in 50,000 of lime, but fortunately the arsenic present is not in a water-soluble state. The prepared limes contained only minute traces of arsenic.

The manufacturer's directions as to the use of these tubes insure a saturated solution as they will theoretically make about five times the directed quantity. The bulk quicklime, Sample No. 4, purified by the U. S. P. IX process, after purification contained no arsenic and made a lime water slightly below standard, showing that the rapidity of solution is dependent on the fineness of the powder and upon the amount of lime used in excess. This shows that pharmacists following the U. S. P. IX process should be sure to titrate the finished product.

TABLE B.— LIME WATER FROM COMMERCIAL AND PREPARED CALCIUM OXIDE.

				50.0 mils expressed in mils N/10 V. S.					
No.	Foreign alk.	Chlorides.	Heat test.	18 Hrs.	36 Hrs.	54 Hrs.	72 Hrs.	$Ca(OH)_2$.	Remarks.
1	Trace	None	Cloudy	21.6	23.2	23.2	....	0.171%	U. S. P.
2	None	None	Cloudy	15.4	17.2	18.4	18.4	0.136%	Not U. S. P.
3	None	None	Cloudy	....	22.4	....	....	0.166%	U. S. P.
4	....	....	.....	....	....	....	....	.....	.....

The U. S. P. VIII directed that Calx be prepared from marble or the purest varieties of native calcium carbonate and to assay at least 90 percent CaO. The U. S. P. IX does not restrict the course but the lime should assay 95 percent CaO. Calx, from marble and oyster shells, are the purest varieties, being almost pure white and containing very little foreign alkalinity, while that from dolomites and limestones is gray in color, and contains iron, silica, aluminum, magnesium, occasionally manganese, and the foreign alkalinity sometimes is excessive.

The U. S. P. IX purification process under Liquor Calcis removes all the soluble objectionable substances, and those that do not dissolve in the purification process naturally will not dissolve in the lime water, insuring a pure product. An improvement in the procedure would be by several washings with cold water which would be imitating the conditions under which the lime water is to be made. One objection to the official purification process is, that each time lime water is to be

[3] Total alkalinity of quantity directed for 118 mils.

[4] Possible amount of 0.14% $Ca(OH)_2$ solution from quantity directed for 118 mils—ratio of excess.

[5] Equivalent to 99.83% $Ca(OH)_2$.

prepared the procedure must be gone through with. It would be far better to prepare a large quantity of the magma at one time as suggested by F. W. Nitardy,[5] or, still better, to dry the magma over a direct flame and then use the dry calcium hydroxide as needed.

Table B shows that the prepared limes make an official lime water on the first separation in about 18 hours.

TABLE C1.—LIME WATER TABLETS.

No.	Average weight.	Carbonates.	Chlorides.	Talcum.	Starch.	Sucrose.
1	0.722 gramme	Trace	None	0.0601 gramme	Present	None
2	0.320 gramme	Trace	None	0.0124 gramme	Present	None
3	0.419 gramme	Trace	None	0.0214 gramme	Present	None
4	0.442 gramme	Trace	None	0.003 gramme	None	0.134 gramme
5	0.755 gramme	Present	None	Present	Present	None

TABLE C2.—LIME WATER TABLETS.—*Continued.*

No.	Iron.	Heavy metals.	Arsenic as As_2O_3.	$Ca(OH)_2$.	Alkalinity of 118 mils.[1]	Possible amt.[2]
1	Present	None	0.0012%	0.477 gramme	12.9 mils N/1 V. S.	339.4 mils
2	Present	None	0.0010%	0.726 gramme	19.6 mils N/1 V. S.	515.8 mils
3	Present	None	Minute trace	0.670 gramme	18.1 mils N/1 V. S.	476.3 mils
4	Present	None	None	0.781 gramme	21.1 mils N/1 V. S.	555.2 mils
5	Present	Minute trace	None	0.566 gramme	15.25 mils N/1 V. S.	404.3 mils

Table C1 and C2 show the analyses of lime water tablets. Starch is present in four of the five tablets; it is present to assist the disintegration of the tablet so that a maximum surface of the lime is exposed to the solvent action of the water. One tablet contained sucrose to increase the solubility of the lime. This is a poor procedure here since the percentage of calcium hydroxide in solution fluctuates to quite a degree so that the lime water from these tablets is liable to a greater variation than the official lime water. One tablet contained 0.0012 percent As_2O_3 and one contained 0.001 percent As_2O_3. The ratio of the excess of calcium hydroxide to the required amount varies between three to five times.

The lime water prepared from these tablets meets the pharmacopoeial requirements, except the lime water from the tablet containing sucrose, which makes a lime water that is too strong. But, the lime waters do not meet the pharmacopoeial requirement as to strength as soon as the manufacturers state. These tablets are intended for the extemporaneous preparation of lime water but it requires, in most cases, fifty-four hours' contact to saturate the water; therefore, lime water prepared from the tablets should not be used for at least three days. One manufacturer advertises to the druggist that his tablets may be used in the prescription department to make lime water extemporaneously. That manufacturer's tablets are sample No. 3 in Table C1 and Table C2 and the lime water from these tablets is sample No. 3 in Table D1 and D2.

TABLE D1.—LIME WATER FROM LIME WATER TABLETS.

No.	Foreign alk.	Chlorides.	Starch.	Sucrose.	Heat test.	Heavy metals.	Arsenic.
1	None	None	None	None	Cloudy	None	None
2	Trace	None	None	None	Cloudy	....	....
3	Trace	None	None	None	Cloudy	....	....
4	None	None	None	Trace	Cloudy	....	....
5	None	None	None	None	Cloudy	....	....

TABLE D2.—LIME WATER FROM LIME WATER TABLETS.—*Continued.*

	50.0 mils expressed in mils N/10 V. S.						
No.	18 Hrs.	36 Hrs.	54 Hrs.	72 Hrs.	250 Hrs.	$Ca(OH)_2$.	Remarks.
1	12.2	19.0	19.4	....	....	0.143%	U. S. P.
2	12.4	18.2	19.2	....	....	0.142%	U. S. P.
3	13.4	17.2	20.2	....	....	0.150%	U. S. P.
4	19.0	28.6	25.6	....	....	0.211%	Not U. S. P.
5	7.0	11.2	14.8	....	22.4	0.166%	U. S. P.

[1] See footnote 3, Table A2.

[2] See footnote 4, Table A2.

Table E is the same as Table D[2], only the lime waters in this case were made one year after the lime waters in Table D[2]. The bottles containing the tablets were opened once a month and then recorked. This table shows that the older the tablets are, the slower will be the saturation of the water.

TABLE E.—SAME AS TABLE D[2], MADE ONE YEAR LATER.

	50.0 mils expressed in mils N/10 V. S.						
No.	18 Hrs.	36 Hrs.	54 Hrs.	72 Hrs.	250 Hrs.	$Ca(OH)_2$.	Remarks.
1	7.6	12.6	17.0	....	21.0	0.155%	U. S. P.
2	15.3	17.4	20.6	....	23.0	0.170%	U. S. P.
3	3.4	7.8	12.0	....	21.5	0.159%	U. S. P.
4	14.8	25.2	25.8	....	21.8	0.161%	Not U. S. P. (54 hrs.)
5	....	....	....	....	....	....	Not re-run

Table F shows analyses of four lime waters purchased from retail drug stores, three of which meet the pharmacopoeial requirements. This is a small number of samples from which to form any idea as to the general quality of lime water sold, but since these samples were obtained from the best drug stores the results may be considered as being the average of the best.

TABLE F.—LIME WATERS PURCHASED AT RETAIL.

No.	Foreign alk.	Sucrose.	Chlorides.	Heat tests.	Heavy metals.	Arsenic.	Titration 50.0 mils in N/10.	$Ca(OH)_2$.	Remarks.
1	None	None	None	Cloudy	None	None	22.2	0.164%	U S. P.
2	None	None	None	Cloudy	None	....	22.6	0.167%	U. S. P.
3	None	None	None	Cloudy	None	....	18.3	0.135%	Not U. S. P.
4	None	None	None	Cloudy	None	....	22.7	0.168%	U. S. P.

There are several methods of dispensing lime water that are noteworthy. One is Nitardy's double siphon method,[6] which ensures a constant supply of lime water. The author modifies Nitardy's method by placing a test tube by the use of a one-hole rubber stopper over the delivery tip which prevents the formation of carbonate, thus preventing clouding the next portion of lime water drawn through. Another method is to use a tubulated bottle, drawing the lime water from directly above the lime. Another method is to have two stock bottles; the object is that while the lime water in one bottle is being allowed to settle, the lime water may be dispensed from the other bottle. One pharmacist filters lime water through a white filter into pint and quart bottles and then these are sold as required. Although this procedure is not countenanced by the Pharmacopoeia, it is not a bad method provided the lime water is sold before it begins to show traces of calcium carbonate. To determine how much lime was lost in standing after ten days off the lime, the following test was made:[4]

1. Filtered off lime and titrated — 44.85 mils = 0.1649 percent $Ca(OH)_2$ w/v.

2. Filtered off lime and titrated after ten days — 43.90 mils = 0.1614 percent $Ca(OH)_2$ w/v or a loss of 0.0035 gramme $Ca(OH)_2$ or 2.12 percent of the total amount present. The U. S. P. IX permits a variation of 17 percent of the total amount of calcium hydroxide merely through a change of temperature between 15 to 25 degrees C.

Rubber tubing on lime water siphons should be watched as the lime water will corrode the rubber tubing in about three months. Only pure gum tubing should be used, as the antimony in red rubber tubing is soluble in lime water.[7]

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COLUMBUS, OHIO,
August 10, 1918.

THE COMMERCIAL GROWING OF SOME EUROPEAN DRUGS IN MICHIGAN.*

BY E. L. WOODHAMS.[1]

In farming operations, as in other lines, the unusual attracts attention. People from other parts of the country who pass through our farms remark that "they didn't suppose peppermint was raised on a farm—they supposed it 'just grew' somewhere." Yet to the local resident, city man or farmer, there is nothing unusual in mint farms—he has seen or heard of them all his life. Climate and opportunity have united to make Southern Michigan and Northern Indiana the home of mint culture. Yet we receive many letters every year from farmers all over the country, inquiring about mint raising; the unusual evidently appeals to them, too.

We presume that it was partly for the same reason that we were favorably inclined toward commercial drug growing, when our Assistant Superintendent, who had had several years of experience growing drugs in England, imported some belladonna and henbane seed and urged that we attempt the culture of these European drugs. We began work in the spring of 1911, so that we had had four seasons' experience with their culture in the Michigan climate before a scarcity appeared and stimulated interest in the domestic growing of these heretofore imported drugs. This experience was invaluable.

There would be but little interest in a report of the culture of these drug plants if all were clear sailing. The cultivation of belladonna and henbane on a commercial scale is, however, new to this locality, and we have found that factors enter into their culture here in Michigan which are unknown in England. Hence it occurred to us that mention of some of the difficulties encountered might be of interest.

The first trouble appeared when we attempted to secure seed of high purity and germination. What little could be supplied by American seedsmen was almost without exception worthless as regarded germination. We decided to raise our own seed, and after two or three seasons' experimentation we found we were able to produce seed of 100 percent purity and over 90 percent germination. This involved the careful selection of parent seed plants and the subsequent propagation of these particular strains, but it was well worth the trouble.

Considering the plant in the order of growth, we fully agree with other investigators that belladonna and henbane are even more subject to the attack of the

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[1] Superintendent "Mentha Plantation," A. M. Todd Company, Kalamazoo, Mich.

Colorado potato beetle than is their near relative, the potato plant itself. The beetle can be fought when the plants are young by means of the ordinary poisons, but poisons surely must not be used when the plant is approaching harvest. Then it becomes necessary to resort to the old-fashioned pan containing a little kerosene, and a stick. This is a rather tiresome procedure on a hot day. The potato beetle is unknown in the drug districts of England, unless it has been introduced very recently.

Another insect enemy is a tiny black "jumping flea beetle"—its scientific name I do not know—which voraciously attacks the plants almost under ground. If present in sufficient numbers a planting will be destroyed over night, and one might think the seed had failed to germinate, whereas it had sprouted and been eaten. It is very difficult to combat this pest, the use of new fields being the best remedy.

The newest insect to trouble the drug plants is the aphis, or potato louse, which according to our observations generally attacks the plants only in the greenhouse. But this year the Michigan Agricultural College has issued warning against this insect, as it is working on the potatoes throughout the State and it has troubled our drug plantations to some extent. Nicotine and "Black leaf 40" sprays are recommended by the College to control this pest, but we have not had any experience in killing it outdoors.

So much for the insect enemies of these drug plants—we have found that the proper use of insecticides, extremely heavy fertilization and clean fields in good tilth all help to give the plant a "running start" which aids greatly in the successful production of the drugs in question.

Another problem that confronted us was that of sufficient drying capacity to handle a commercial area. The first year that we had a large acreage of belladonna we were forced to use all the available shed room on our farm to dry the herb. The time consumed was over a month, as the weather was cool and rainy in the fall, consequently the color of many of the leaves was brown instead of green. We then planned and erected a steam-heated, electrically-lighted dry kiln, which consisted of four rooms or separate kilns which could be filled in rotation. This kiln had a drying area of over 40,000 sq. ft., and has since been extended. The temperature is kept constant by pressure regulators, and a system of ventilation is provided so that fresh hot air is passed through the herb continuously. The result is that the herb is in the kiln and the drying process begun before the plant has even wilted; and the finished product can be baled and enclosed in heavy cardboard cartons within 48 hours or less from the time it is growing in the field. The color is as perfect as it was in the field, and we feel sure that the darkness during drying, as well as the rapidity with which the material is handled, prevents the enzyme action which is supposed to cause the discoloration of the herb so noticeable in slowly dried leaves.

There is one other difficulty which we have encountered, of as much interest to the consumer as to ourselves. We refer to the extreme difficulty of securing comparable analyses, which are necessary if the buyer and seller are to agree. We have endeavored to investigate this matter very thoroughly, both for the protection of our customers and for our own satisfaction, and we may briefly summarize our findings as follows:

We believe that the prime cause of the discrepancies in analyses, which seem to occur even when the very best chemists are employed, is *not* in the slight difference in methods, nor in the technique of the analysts, but almost wholly in the method of selection of the sample from the bulk goods which it is to represent.

First taking the case of foreign drugs—they are imported in large bales of about 400 pounds, I believe; these are *for the most part not* cultivated plants, but are "weeds" as we would say in this country. The peasants in certain districts gather them and sell to dealers, who in turn may resell them, so that when the bale is finally exported from Europe it may contain leaves in all stages of growth from thousands of different individual plants grown under various soil and climatic conditions. Add to these the usual amount of chicken feathers, sunflower seeds, dirt, weeds and even adulterants found in the foreign drugs, and you will have some idea of the difficulty of securing a fair sample. The very thorough work of Dr. W. W. Stockberger and Mr. Arthur Sievers, of the Department of Agriculture, has shown that each belladonna plant has an alkaloidal content peculiar to that plant and that this peculiarity is largely transmitted to its descendants, so that the individual plants may vary from 0.10 percent to over 1.00 percent alkaloids. So it may readily be seen that the analyst, although trying as honestly as he can to secure a fair sample, may secure four different results from as many parts of a bale. In fact, one of the largest drug firms in the United States recently told us of having exactly this experience. The only fair way to do is to mill the whole bale, which is hardly practicable unless the bale has been purchased.

Turning to the domestic product, we find the problem much easier. In the first place, all plants are grown in one place at the same time, so that the stage of growth is practically uniform. In our work the seed that we use has been bred up from a very few plants of known origin in which the alkaloidal content is equal to or higher than the U. S. P. requirements. As regards dirt and foreign matter in the product, we try to keep our fields absolutely clean and free from weeds, and in addition the plants are cut singly by hand, thus eliminating any weeds that are hidden under the plants. When the herb arrives at the kiln from the field it is inspected and all dirty or discolored leaves sorted out.

Then you may inquire, "If all the factors which make the foreign bale variable have been taken care of, why not take a sample at random, say 4 ounces, from the 50-pound bale and assume that this will be the average of the bale?"

There is, however, one other factor present in both the foreign and domestic product which we did not mention in the discussion of the foreign bale, as in that case it was overshadowed by the other variables; but in our domestic product, which may be homogeneous in other ways, it assumes a position of paramount importance in the selection of a fair sample. This factor is the variation in the percentage of alkaloid present in various parts of any individual plant.

We have the analysis of a complete henbane plant as follows:

The flowering tops comprising 8% of the weight of the plant.....	0.135% alk.
Large leaves on main stem comprising 18½% of the weight of the plant....	0.113% alk.
Small branchlets and leaves comprising 41% of the weight of the plant.....	0.123% alk.
Stalks and coarse leaves comprising 32½% of the weight of the plant.....	0.102% alk.

This particular plant was almost double the U. S. P. requirements, but still greater differences have been found between the various parts of plants in other instances, but this instance shows the possibility of inaccurate results should a small sample be taken from a large bale, in case the chemist selected more than the correct proportion of any part of the plant.

We have adopted the following method as giving the fairest result and have used it satisfactorily during the past year: Suppose 1000 pounds from one field is harvested at one time; this is dried and placed in bins where it is thoroughly and carefully mixed until it is uniform. Next, 20 bales of 50 pounds each are pressed; a whole bale is then taken at random from the 20, milled and analyzed. This analysis is then rightfully assumed to show the content of the 1000-pound lot in question. This method is the only one that we have been able to devise which is fair to buyer and seller and which will allow comparable assays.

As to the future of the commercial drug growing industry in this country, we believe one man's guess is as good as another's. There are so many factors entering into the proposition, due to and arising from war conditions, that we really do not have a very firm opinion as to the outcome. We do not believe the small farmer will ever go into the drug business extensively—it requires too much capital for dry kilns and equipment, much more of an investment, for instance, than is required to distil mint. The small farmer is loath to enter a new field. As regards the small "back yard" grower, we do not believe he will ever grow enough to affect the market. The supply then, if raised in this country after conditions are normal, must come from the farms of pharmaceutical houses that are vitally interested in the production of good drugs or from the farms of the large growers who have sufficient land and equipment to warrant the continuance of the industry.

This brings us to the question of whether, after the war, the American drug houses will be content to go back to the pre-war quality of European shipments or whether they will demand the high quality drugs that they themselves have been raising on their experimental farms and such as the American growers have shown them can be successfully produced in this country under laboratory control. If American drug houses want "quality," the American drug industry will, we believe, survive after the war.

Addenda—June, 1919.

Since the above paper was submitted, the war has ended and a slight extension may be considered in order.

The European drugs which were imported previous to 1914, were, according to our best information, largely gathered by the peasants in Austria and Russia in a very crude way. Very little was done in Europe in the way of scientific cultivation except in England where several firms maintained small acreages of belladonna and henbane. These two drugs also grew wild in England and were gathered. England seldom, if ever, had a surplus to export—in fact, continental herb was sold in large amounts in England.

We firmly believe that the United States could compete in cost of production with their European competitors, despite the lower standard of living, if the competition were on an equality basis. However it is not possible to compete if

the European product is, in the future as in the past, to be simply "gathered" from waste places where there is no more production expense than there would be in this country in the gathering of rag-weed along the roadside.

Drug houses of the highest class, who aim to use the very best raw materials that the market affords, will doubtless be as anxious to continue the use of the higher grade American products as the American growers are to supply them. Other firms who desire the foreign drugs because they are cheaper, may not be interested in seeing the American industry protected. It is certain that the cultivated drug cannot be raised in this country as cheaply as the foreign wild drug can be gathered.

The Senate Committee is at present holding hearings covering this phase of the question, and it is the writer's opinion that if a moderate duty is placed on the importation of foreign drugs, sufficient to allow the high grade American *cultivated* herb to withstand the competition of the *wild, uncultivated* European herb, then the American drug industry can survive.

AN EXPERIMENT WITH COMPOUND TINCTURE OF BENZOIN.*

BY J. C. AND B. L. DEG. PEACOCK.

This paper is entitled "An Experiment on Compound Tincture of Benzoin" because it does not essay to be an exhaustive study. The experiment is limited to a single use of this renowned remedy. Indeed a study of any one of its ingredients must appear to be a life's work to those who read the descriptions of these drugs and the tables of their contents. There is, however, an aspect of similarity between the constituents of two of the ingredients, tolu and storax, which, although not the reason for this paper, did tend to make the subject more worthy of consideration. The report that no true storax was to be had at any price suggested the experiment; and as the pharmaceutical use of storax is chiefly for preparing Compound Tincture of Benzoin, the idea occurred to compare it with tolu under the conditions to be described.

The addition of compound tincture of benzoin to boiling water and the use of the vapor therefrom to treat the throat in certain conditions is the circumstance under which we experiment. This matter perhaps seems too well known to even bear mention. But, strange to say, like so many of the simple things, the exact products of this process do not appear to have been reported in the pharmaceutical lore of this "old-timer." Instead it appears to have been presumed that he who knows what is in the ingredients infers from their nature that certain substances pass off with the steam, and being carried by it to the throat have their effect. The writers have been unable to find any reference to the vapor having been examined, and realizing that it would be of interest to learn more of the matter, especially as regarded the necessity for storax, they sought to examine the vapor, by imitating the conditions under which the treatment is applied, through the use of a retort and condenser.

Accordingly, a half teaspoonful of Compound Tincture of Benzoin was poured into a pint retort half full of boiling water, and as would be expected, an intense

* Read before the Section on Practical Pharmacy and Dispensing, A. Ph. A., Chicago meeting, 1918.

demonstration of activity, due to the dissipation of the alcohol, immediately took place. The retort was closed without delay and the boiling continued. The distillate was collected in fractions of about one ounce, in order to observe the progress of the process. Seven such fractions were thus taken. The fractions were all colorless, although they displayed a slight turbidity due to an oily scum which floated throughout. The fractions remained turbid upon standing for several days. The distillate in all its parts showed an acid reaction to litmus, but the cause of the turbidity was also an interference with the effect on litmus paper, retarding it very perceptibly. The degree of acidity did not exceed in indications one-sixth grain of benzoic acid per fluidounce of distillate. The proportion of acidity appeared to be uniform throughout the series of fractions. The odor of the fractions varied to some extent but were true to their source. The taste of the fractions was likewise suggestive of the origin.

Although the residue in the retort is not a specific object of the experiments, attention to it at this stage was believed to be warranted. The marked acidity of this fluid established the fact that the total acidity of the ingredients is by no means wholly volatilized by the process, even in the time required to conduct this distillation—a period much longer than the most faithful patient would consent to devote to a single treatment. Thus are the commonly directed proportions of "one teaspoonful to be added to a pint of boiling water" shown to be sufficient and more but a waste of the tincture.

In order now to get a better knowledge of what would be obtained from a considerable volume of the compound tincture of benzoin so distilled with water, the solid ingredients required for 100 mils were placed in a retort with 250 mils of water and a distillation conducted as before. The fractions had odors which varied but always reminding of the ingredients. They all had warm pungent tastes. They were without exception colorless and transparent; acid to litmus, apparently uniformly so as to strength; and in each floated small droplets of a fluid substance, or flattened areas of the same appeared upon the surface. The amount of the total yield of this substance from the quantities representing 100 mils was approximated at less than 0.5 mil (8 minims). The proportion of this substance to the condensed liquid ran the same in all of the fractions.

Attempts at separating it from the aqueous portion by inducing coalescence of the droplets failed, it is believed, only because of the small amount of the substance, so recourse was had to the use of ether with the hope that this substance and any benzoic and cinnamic acids present in the aqueous portions of the distillates might all be removed and made available for further examination. Upon evaporation the ether solution left a residue which was recrystallized from alcohol, in which it was found to be readily soluble. This treatment yielded a mixture composed of the pale amber-colored oily substance and small, white, granular crystals. The odor of the distillates was still recognizable in this residue. The first portion of ether so applied carried the oily liquid into solution to a certain extent, dependent upon a selective solvent effect which it exercised, but not in its entirety, a fact proven by the presence of numerous droplets which remained as the undissolved portion of the original droplets, even after a second treatment with ether, while the residue from the second ether showed white, granular crystals and but little other substance.

Chloroform had the same solvent effect upon this residue of the droplets as did ether. The mixture of the oily and granular substances was treated with very dilute solution of sodium hydroxide to remove any benzoic acid which might be present. The effect of this solvent on the oily portion of the residue was to cause it to assume a buttery consistency. Cold water produced the same effect and warmth restored the oily globules. When this buttery material was heated with a five percent solution of sodium hydroxide it became fluid but did not dissolve.

The granular crystals gave reactions for both benzoic and cinnamic acids; the former seemed to be present in larger quantity.

Attention was now turned to the ingredients as individuals, and each of them was distilled with 250 mils of water, using the quantity of drug which would be needed to make 100 mils of compound tincture of benzoin, this plan serving to compare them not only with the latter but also with each other. Again, to observe any irregularity in the progress of the treatment, the distillates were collected in fractions, and it is noteworthy that the fractions from the same ingredients were invariably uniform throughout the series. Likewise, the distillates were all colorless, while the odors and tastes were characteristic of the sources.

Ten grammes of benzoin, when distilled as described, gave a distillate having a whitish opalescence when first received, but after a few hours showed a slight sediment of white, dust-like powder. The liquid reddened litmus; and after one of the fractions had been neutralized with solution of sodium hydroxide it showed benzoic acid in slight amount compared to reasonable expectation.

Two grammes of aloes treated in the same manner gave a transparent distillate in which floated a trifling amount of scum. The substance of which it was composed seemed to agglutinate upon agitation, but the quantity was too minute for further examination. The distillate remained clear upon standing. Litmus was not affected by it.

When 4 grammes of tolu were subjected to the same process a distillate with a milky opalescence was obtained, the cause of which was the presence of a substance that in the main floated upon the surface of the liquid in distended droplets, although upon standing it became transparent through the coalescence of the minute droplets into globules of sufficient size to admit of this result. These globules were colorless or very pale amber-colored. Warmth and quiet did not promote coalescence, but tended to increase the layer floating upon the surface, while contact with ice clouded the distillate made transparent by standing, presumably through excluding some or all of the substance with which the water was saturated. The reaction of this distillate was acid to litmus. The test for benzoic acid showed but a faint indication of its presence.

Eight grammes of storax were next distilled. The distillate as received from the cool condenser showed a small quantity of a white, tissue-like scum which upon the slightest agitation broke up into feathery forms, and immediately passed into droplets of an oily substance, mainly floating upon the surface. The properties of these droplets were strikingly similar to those from tolu except in odor. The quantity of them in this experiment was approximately the same as that from the tolu, although in percentage quantity it was but half what tolu yielded. The effect of heat and cold on this distillate resembled in all respects the behavior shown by the distillate from tolu. Except for the scum this distillate was trans-

parent when obtained, and it remained so upon standing, as did the distillate from tolu. It was neutral to litmus, and tests showed no benzoic acid.

These experiments demonstrate in a practical manner, for the valuation of the idea being considered, that there is a remarkable similarity (identity is not asserted) in the products of a steam vapor from tolu and storax; also that tolu yields twice as much of these products as does storax. Again, steam volatilizes a certain proportion of the constituents of both substances, as well as of benzoin, but does not nearly exhaust any of them in the time that would be devoted to the treatment. The final result must be essentially the same whether the tincture is added to boiling water or to cold water, and this brought to boiling.

And let us add just a few words here as to actual requirements of temperature for the mixture of tincture and water, regardless of utensils, of which there are many kinds. It is necessary to have at least a slight ebullition observable in the mixture to insure sufficient velocity in the ascending vapor to properly carry it back into the throat. Less than that affords but warmth, and not the reassuring impact of vapor which is had from a boiling liquid. Nor is there any position quite so favorable as that of bending over a column of vapor, rising vertically, so as to bring it into right angled contact with the back wall of the throat.

In drawing conclusions it will be well to review the findings. As will be recalled, the ingredients of 100 mils of compound tincture of benzoin (twenty times the quantity usually prescribed for the purpose) gave but minute amounts of any or all of these volatile substances. The aloes, having supplied but its odor, and nothing of worth, may surely be omitted without loss of activity. Benzoin, under the conditions, furnishes little, if anything, besides a very small amount of benzoic acid; storax yields no benzoic acid but does supply the oily substance hereinbefore described; tolu gives but a trace of benzoic acid, but twice as much of a similar oily substance as does storax. Except for the fact that benzoin furnishes a larger proportion of benzoic acid than does tolu it might also be omitted. Consequently, though this treatment be used for the medication contained in the vapor, as well as for the avowed effect of the steam, it would now seem unnecessary to include the storax; and even if there is the necessity for conserving it, which arises because of its scarcity in the market, such does not appear to be the only reason it may be permanently left out of this treatment, and compound tincture of benzoin reserved for other uses.

The following formulas are capable of furnishing products similar to those obtained from compound tincture of benzoin:

Tincture of benzoin	2.5 mils
Tincture tolu	2.0 mils
Alcohol	0.5 mils
Mix them to make	5.0 mils

to be used in place of the same volume of Compound Tincture of Benzoin. This formula, in the accustomed quantity, seems worthy of trial.

Another formula that will suggest itself, because it is the same as the foregoing, but minus the alcohol, is:

Benzoin, in coarse powder	0.5 gramme
Tolu, in small fragments	0.4 gramme

Mix. Use as the equivalent of 5 mils of the tincture of benzoin and tolu just described.

At first sight it might seem wasteful to use the alcohol which, from observation, is volatilized the instant it touches the boiling water. But the alcohol serves a purpose in distributing the materials upon the water that must not be overlooked; for when the solids are used without previous solution the benzoin and tolu soon become adherent to the sides of the vessel, and, to appearances at least, are protected to a large extent from the action of the boiling water.

Following thought through the channels which lead to the use of active principles in place of simples, we find ourselves confronted by the possibilities in the combination of:

Benzoic acid	0.63 gramme
Tolu	4.00 grammes

Mix and use as equivalent of either formula.

The amount of benzoic acid is based on the official requirements of 12.5 percent in benzoin from any source.

And as a final alternative, tincture of tolu in quantity equal to the commonly used compound tincture of benzoin is believed by the writers to be quite as suitable for the purpose, for it supplies a sufficiency of the oily substance, and being a 20 percent tincture, in this proportion very likely furnishes as much benzoic acid as would the 10 percent of benzoin in an equal volume of the compound tincture.

THE STATUS OF ALCOHOL LEGISLATION.

The exemptions named under the Volstead (Internal Revenue) bill relate to:

Denatured alcohol or denatured rum produced and used as provided by existing laws and regulations.

Medicinal preparations manufactured in accordance with formulas prescribed by the United States Pharmacopoeia or National Formulary or the American Institute of Homeopathy that are non-potable and incapable of being used for beverage purposes.

Patented and proprietary medicines that are non-potable and incapable of being used for beverage purposes.

Toilet, medicinal and antiseptic preparations and solutions that are non-potable and incapable of being used for beverage purposes, contained in bottles or packages, upon which are printed conspicuously and legibly in English the quantity by volume of alcohol in such preparation.

Flavoring extracts for use only in cooking and for culinary purposes that are non-potable and incapable of being used for beverage purposes.

The Oil, Paint and Drug Reporter draws these deductions from the hearings and expressions:

That despite the surety that insofar as it relates to the manufacture and use of intoxicating liquors the prohibition law will be enforced, every provision will be made for the protection of the legitimate user of industrial alcohol, and for the punishment of the illicit user and nostrum faker.

That the enforcing officers, the Internal Revenue Bureau, not only stands ready to assist the industries of the country in securing supplies of industrial alcohol, but in enlarging the scope of its present uses.

Deputy Commissioner Gaylord voiced the attitude of his associates when, in closing the hearing, he said:

"I do not think anybody can foresee how great is the importance of providing an unlimited supply of cheap alcohol for the industries of the United States. There has already been made an alcohol fuel which, if it can be made sufficiently cheap, will provide an adequate substitute for gasoline, for coal, and for any other fuel. The problem is, 'What can American chemists do with alcohol?' They have already done much, and either have developed or are developing such new things in connection with alcohol that I do not think it is overoptimistic to expect that almost anything may be developed either in the line of fuel or as a material for an almost unlimited variety of industries."

Mr. Crounse epitomized the importance of alcohol when he said: "Alcohol occupies a tremendously important position in the industries of the country. If I were to say that it is as important industrially as pig iron I do not think the statement would be extravagant."

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

THE NARCOTIC LAW TROUBLE.

BY DR. A. R. L. DOHME, Baltimore.

Contribution of Committee on Local Branches for reading and discussion at the May meetings. Ivor Griffith, *Chairman*.

The abuse of narcotics commonly known as the "Drug Habit" has been for many years, and is to-day, the most insidious and dangerous vice existing in the world. Immorality, alcoholism and cigarettes are all three very bad vices and habits and have caused and are causing much domestic trouble and unhappiness and, as well, undermining the health of the people, but none of these three destroy moral fibre and destroy character to the extent that does the abuse of narcotics.

Immorality, or vice, as it is commonly called, breaks up homes and spreads disease; alcoholism disturbs the peace of communities and causes want and suffering and sorrow in homes; cigarettes cause early deaths and indolence, as well as inefficiency; but the narcotic habit destroys self-control, moral fibre and character, as well as undermines health. Those who have studied all these vices and bad habits will agree that the drug habit is the worst, both in its effect upon the individual and upon the community.

The move to enact the Harrison anti-narcotic law had its origin with the drug trade and its enactment into a federal law was made possible by the National Drug Trade Conference, who persisted for over two years and finally succeeded in securing its passage. Unfortunately, as we know now, its execution was placed in the wrong hands and that has been the cause of all the trouble with its success in preventing the continued securing of narcotic drugs by the unfortunate habitues who are slaves to these drugs such as morphine, opium, laudanum, cocaine, codeine, etc. Ample provision is made in the law to control the securing of these drugs and to plug up the channels by which it gets through the meshes of the sieve intended to keep it from reaching the habitues. The trouble has been that the law has not been enforced by the Government, and the reason the law has not been enforced is that it was put into the hands of the Internal Revenue Department, when the law is not a revenue, but a health measure. Every one who imports, manufactures, jobs, retails or dispenses any narcotic drug must keep accurate and complete files of every order he receives for said goods, made on the numbered and registered order blanks issued for that purpose by the Federal Government. This accumulation of these order blanks has been going on for some years, but they are seldom made use of and inspected by the inspectors of the Internal Revenue Department and in consequence the users and buyers of abnormal quantities of narcotic drugs are not traced up and apprehended. This is in my opinion due to the fact that the anti-narcotic law produces no revenue to speak of and should not, since it is not a revenue measure. In consequence the Internal Revenue Department is not especially interested in the law or in its enforcement, because if properly enforced it would require the expenditure of much more money than it produces. This would produce a deficit in the Internal Revenue Department for this law and no collector of revenue feels justified in producing deficits and probably correctly and naturally so. The fault is hence not really his own, but should rather be put upon the shoulders of those that enacted the law, the joint responsibility for which would probably belong to Congress and the National Drug Trade Conference. There was, however, a condition at the time of the law's enactment which excuses this blame. We all realized at the time that there was grave doubt whether the law would be passed at all because it was not a revenue measure, although referred to the revenue department for en-

forcement. There was, however, no other agency of the Government at that time to which it could be referred and the analogy with the alcohol law caused it to be referred for enforcement to the revenue department. Alcohol regulation, while it is also a health measure, is, however, primarily a revenue measure; in fact, one of the largest revenue producers of the Federal Government. Since that time, however, another department of the Government has developed and grown into prominence—the Public Health Department, over which Surgeon General Blue presides. This department has the facilities and as well the interest to properly enforce the anti-narcotic law and besides these has obtained the prominence and importance to make it one of the important federal departments.

The solution of the narcotic trouble, therefore, appears to be the amendment of the Harrison anti-Narcotic Act, known as the Act of Congress approved December 17, 1914, to the effect that its enforcement shall be placed in the hands of the Public Health Department and taken from the hands of the Internal Revenue Department. Then the study and following up of the record of sales of these narcotic drugs would be thoroughly and continuously done and the loop-holes through which the narcotic drugs now escape detection and reach the habitue would be gradually and effectively closed and eliminated.

CINCINNATI.

The Cincinnati Branch of the American Pharmaceutical Association held its monthly meeting in connection with the Ohio Branch of the National Pharmaceutical Association at the new Y. M. C. A. building, Tuesday evening, April 22nd. About sixty covers were laid, and the members and friends spent a very enjoyable and instructive evening.

After Secretary Charles A. Apmeyer had given a résumé of the activities of the Association for the previous year, which report was duly approved, President Louis Werner introduced the speakers of the evening.

Professor E. Fullerton Cook, of Philadelphia, who was to have spoken on "Pharmaceutical Service," was unable to be present; he had, however, telegraphed his regrets and mailed his paper, which was read by Dr. Frank Cain.

The next speaker, Dr. Charles T. Souther, M. C., U. S. A., with Evacuation Hospital at St. Mihiel Sector, France, and Base Hospital 25, Allevey, France, Hospital Center with 20,000 beds, spoke on "Medical and Pharmaceutical Work in the Army and Navy," giving such a graphic and realistic account that his interested auditors could feel and almost see the splendid accomplishments performed by the medical and pharmaceutical forces in their dangerous positions.

Edward A. Lehr, Ph.G., of the 330th Division of the Medical Corps, U. S. A., chose as the title for his discourse, "The Druggist in the Army." He deplored the non-recognition of pharmacists in the service with regard to rank, and praised the uncomplaining sacrifices made in the performance of their duties on behalf of their country.

The Secretary of the Ohio State Pharmaceutical Association, Theodore D. Wetterstroem, told in a unique way of the activities of the Ohio legislative body, mentioning especially those measures affecting the drug trade which have become laws during this session. Over 713 bills were introduced—150 passed.

A message from President Charles H. LaWall, of the American Pharmaceutical Association, was read and also a contribution from President George M. Beringer, of the National Pharmaceutical Service Association.

We had the pleasure of the presence of Professor Edward Kremers, of the University of Wisconsin, who was the honored guest of Dr. John Uri Lloyd.

CHARLES A. APMEYER,
Secretary.

CUBA.

The Cuban Branch of the American Pharmaceutical Association held a meeting at the Academy of Sciences of Havana on Saturday, April 19th, at 2 o'clock.

Dr. Eduardo Garcia Faundo, as provisional President, called the meeting to order. Dr. José P. Alacán, Secretary, read the minutes of the last meeting, which were approved.

This being the meeting for the election of officers, the following were elected:

President, Dr. José P. Alacán.

First Vice-President, Dr. Gerardo Fernandez Abreu.

Second Vice-President, Dr. Rogelio H. Ramirez.

Third Vice-President, Dr. Alva ro Porro.

Secretary and Treasurer, Dr. Felipe de Pazos.

The following members were present: Dr. Garcia Faundo, Dr. Goltz, Dr. Luisa Calonge, Dr. Sylvia C. Alacán, Dr. Ortiz, Dr. Herrera, Dr. Varela and Dr. José P. Alacán, Secretary.

José P. Alacán,
Secretary.

PHILADELPHIA.

The regular monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held at the Philadelphia College of Pharmacy, Tuesday evening, May 27, 1919, President Griffith occupying the chair.

The business of the meeting was dispensed with until after the end of the principal address on account of the other engagements of the speaker. The subject of the address was "Conditions on the Italian Front," by Lt. Colonel C. P. Franklin, of the U. S. Ambulance Service, with the Italian Army. Colonel Franklin gave a very comprehensive résumé of the activities on the Italian front, emphasizing the wonderful fighting qualities of the Italians. He contributed a number of the unfavorable impressions concerning the Italians as a part of clever German propaganda. Dr. Franklin illustrated the Italian problems in an entirely different light, and all present were well repaid after listening to the story of the wonderful achievements in the Alpine battlefields.

Before leaving for another engagement Colonel Franklin was given a rising vote of thanks. The business of the meeting then proceeded with the reading of the minutes of the last meeting, which were approved. The names of fourteen new members were proposed and were duly elected. The "Four-Minute Paper" was read by the Secretary and was contributed by Dr. A. R. L. Dohme, of Baltimore, on the subject, "The Narcotic Law Trouble." Dr. Dohme called attention to the mistake in having the Harrison Narcotic Law enforcement in the hands of the Revenue Department instead of the Public Health Service. Upon the suggestion of Mr. Hunsberger, the Secretary was instructed to communicate with Dr. Dohme, asking for some definite plan by which to overcome the present difficulties in getting proper police powers for the Federal Government when interstate commerce was not actually concerned.

A "Prescription Clinic" followed. The discussion was led by Adley Nichols, P. D., who presented several interesting incompatibilities. Further discussion followed by Messrs. Hunsberger, Cliffe, Lowe, Griffith, Harrison, Apple, Ehman, Glass and Friedman.

A motion of adjournment was made to meet again in September. There were approximately fifty persons present.

Elmer H. Hessler,
Secretary.

CORRESPONDENCE

UNITED STATES PHARMACOPOEIAL CONVENTION OF 1920.

Article VIII, Chapter I of the By-Laws of the United States Pharmacopoeial Convention provides that the President:

"Shall issue, on or about the first of May of the year immediately preceding that of the decennial meeting, a notice inviting the several bodies, entitled under the Constitution to representation therein, to send delegates to the next meeting. He shall repeat the notification, eight months later, and shall request the medical and pharmaceutical journals of the United States to publish the call for said meeting."

Article II of the Constitution provides:

"The members of the United States Pharmacopoeial Convention, in addition to the Incorporators and their associates, shall be delegates elected by the following organizations in the manner they shall respectively provide: Incorporated Medical Colleges, and Medical Schools connected with Incorporated Colleges and Universities; Incorporated Colleges of Pharmacy, and Pharmaceutical Schools connected with Incorporated Universities; Incorporated State Medical Associations; Incorporated State Pharmaceutical Associations; the American Medical Association, and the American Chemical Society; provided that no such organization shall be entitled to representation unless it shall have been incorporated within and shall have been in continuous operation in the United States for at least five years before the time fixed for the decennial meeting of this corporation."

Section II of the Constitution provides:

"Delegates appointed by the Surgeon General of the United States Army, the Surgeon General of the United States Navy, and the Surgeon General of the United States Marine-Hos-

pital Service, the Secretary of Agriculture, the Secretary of Commerce and Labor, the Association of Official Agricultural Chemists, the Association of State and National Food and Dairy Departments, the National Wholesale Druggists' Association, and the National Dental Association, and by the organizations not hereinbefore named which were admitted to representation in the Convention of 1900, shall also be members of the corporation. Each body and each branch of the United States Government above mentioned shall be entitled to send three delegates to the meetings of this corporation. But no such delegates as are provided for in this article shall be members until their credentials shall have been examined and acted upon as provided for by the By-Laws."

In the discharge of the above required duties, I hereby ask all competent and designated bodies and authorities to name and issue credentials to the fixed number of delegates to the tenth decennial Convention to meet in Washington, D. C., on the second Tuesday of May, 1920, at 10 o'clock A.M. at a hall to be designated hereafter. The appointed delegates are requested to promptly forward their credentials to Noble P. Barnes, M.D., The Arlington Hotel, Washington, D. C., assistant Secretary of the Convention, who will file them for consideration of the Committee on Credentials which will be appointed by the President not later than March first, 1920, according to the requirements Chapter VII, Article I of the By-Laws.

Done at Washington, D. C., May 5, 1919.

HARVEY W. WILEY,
President of the United States Pharmacopoeial Convention.

FEDERATION OF AMERICAN PHARMACY.

The Federation Committee of the American Pharmaceutical Association, H. V. Arny, chairman, has issued the following bulletins during the year. All of the State Pharmaceutical Associations have received copies and they have been made subjects for discussions at the annual conventions.

BULLETIN NO. 1.

The foremost topic of discussion at the Chicago meeting of the American Pharmaceutical Association was Pharmaceutical federation. This idea, first enunciated by H. P. Hynson, elaborated by F. J. Wulling in his presidential address of 1917, and presented in a tangible form by President Dohme, was the subject of careful consideration, and the decision arrived at, while not as comprehensive as the more sanguine friends of federation desired, is at least a long step forward and gives promise of greater progress in the future.

The Dohme plan, it will be recalled, included a federation of national pharmaceutical bodies and of State associations in a reorganized house of delegates and a council of the American Pharmaceutical Association. In addition there was planned a central board of control of three salaried officers to look after (*a*) editorial, (*b*) legislative, and (*c*) chemical research activities that the new greater body would conduct for the good of American pharmacy, a term meant to include every phase of pharmaceutical activity.

On August tenth a conference of the national drug associations was held to consider federation, and at this meeting a decision was reached that at this time and as far as national drug associations were concerned federated pharmacy could be best accomplished by extending the scope of the National Drug Trade Conference even to the extent of admitting the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties. This tangible federation of national drug bodies was immediately followed by an agreement on the part of all delegates present that another federation conference should be held on the Saturday prior to the 1919 meeting of the American Pharmaceutical Association.

BULLETIN NO. 2.

The idea of federation of State pharmaceutical associations was pushed forward at the Chicago meeting of the American Pharmaceutical Association by the enlargement of the scope and functions of the A. Ph. A. house of delegates, which, as now agreed upon, is to consist of delegates from State associations, who can vote, however, only if members of the American Pharmaceutical Association. An important forward step was the formulation of an arrangement whereby a combined State and A. Ph. A. membership may be obtained for one fee.

As the federation plan now stands, two of the three principles of union as enunciated by former President Dohme are now well along the way of accomplishment. The two, however, need a connecting link in the shape of service features, a bond that will bind together the common

interests of national and State associations. The Dohme idea of a board of control was held in abeyance chiefly because the magnitude of the task is such as calls for careful rather than hasty consideration. That some sort of service features should obtain is, however, apparent to all, and the choice of kinds will be the task of the A. Ph. A. federation committee during the coming year.

BULLETIN NO. 3.

How can American Pharmacy be federated along the lines of mutual service? What simple type of federated service might be brought into being with the least disturbance of existing organizations? One type should deal with legislation. The Drug Trade Conference should appoint as an advisory committee the chairmen of the legislative committees of each State pharmaceutical association.

Another type of coöperation should be the federation of the research committees of the national associations, possibly with an advisory committee consisting of the chairmen of the committees on papers and queries of each State pharmaceutical association. And lastly there should be a federated committee on publicity. This is the most crying need of American pharmacy. We have talked a great deal about the remarkable influence of the American Medical Association, and on analysis we find that the cause of its power is publicity. We have wondered at the remarkable achievement of the American Chemical Society in developing public opinion to the extent of establishing a chemical corps in the Army, and when we seek the main factor of success we find publicity.

We pharmacists ask ourselves why the Edmonds' bill does not pass; why the will of one man in the Medical Corps thwarts the efforts of thousands of pharmacists; why the chemical corps gets credit for pharmaceutical work done by a pharmacist in the corps, and our answer is lack of publicity.

A federated committee with funds sufficient to conduct the work of furnishing the daily press with news items relating to pharmaceutical progress is essential if American pharmacy is to come into its own, and the creation of such a committeee would be the most practical step toward the federation of pharmaceutical bodies.

BULLETIN NO. 4.

In the preceding talk on Federation, mention was made of the possible formulation of an arrangement whereby a combined State Association and A. Ph. A. membership could be obtained for one fee. This will be accomplished if the individual associations approve of the advantageous plan suggested at the Chicago meeting of the American Pharmaceutical Association and which, after discussion, was referred to the State Associations for discussion at their annual meetings of 1919. The idea is embodied in a proposed amendment to an A. Ph. A. by-law, which, if adopted, will offer membership in the A. Ph. A. at $3.00 per annum, to State Association members, "if the number of members of the American Pharmaceutical Association, who are members in good standing of any State Association shall equal 100 per centum of the actual number of members of such a State Association." (See JOURNAL OF THE A. PH. A., October 1919, pages 883 and 909.)

This proposition is worthy of the careful consideration of every pharmacist having the welfare of his State Association close at heart.

BULLETIN NO. 5.

The proposition outlined in the preceding "Federation Talk" offers State Associations club rates in American Pharmaceutical Association membership. It means that if the plan is carried out, the association will furnish its two great publications, the JOURNAL of about 1100 pages and the Year Book of about 500 pages, to State Association members at a remarkably low figure. To non-members, each of these publications costs $4.00 a year, making a total cost of $8.00; to its present regular membership, the two are furnished for the annual dues of $5.00; and now the proposition is to furnish these volumes to members of State Associations (on a 100 per cent. membership basis) for $3.00 a year.

In the average State Association, the annual dues are $2.00. For this, the member gets the splendid legislative protection offered by all live State Associations; the opportunity for exchange of views at the annual conventions and the annual Proceedings, constituting an attractive volume filled with good material.

If the "club rate" suggested by the American Pharmaceutical Association goes into effect, for $5.00 a year the State Association member will obtain all of the advantages gained at present from his $2.00 dues, and in addition the two publications, the JOURNAL and the Year Book of

the A. Ph. A., representing a retail value of $8.00. Ten dollars for five is surely a striking offer, but it is only a fraction of the advantages offered by A. Ph. A. membership. Of even greater value than the material offer suggested above are the intangible but very real advantages that any pharmacist gains from being a part of the American Pharmaceutical Association.

BULLETIN NO. 6.

What are the abstract advantages of A. Ph. A. membership? To those of us who are active in its affairs, the greatest pleasure comes from the privilege of carrying on the work, so wisely planned and conducted by the great men of American Pharmacy of twenty, or forty, or even sixty years ago. For sixty-six years, the American Pharmaceutical Association has stood for the best in Pharmacy and to-day it is still living up to its traditions. The influence of the A. Ph. A. upon our calling in this country is immeasurable. Practically every State Association was founded upon its initiative. The Associations of pharmacy colleges and of State boards were organized at meetings of the A. Ph. A. and still hold their meetings at the same place as and just prior to the A. Ph. A. convention. That potent influence in national legislation, the Drug Trade Conference, was the outcome of a discussion at an A. Ph. A. meeting; in its council the A. Ph. A. wields much influence. Unsatisfactorily slow though it may be, whatever progress has been made in improving the status of pharmacists in the United States Army and Navy has been largely due to the efforts of the A. Ph. A. Committee created for that purpose in 1894.

That standard of pharmaceutical practice, the National Formulary, is a child of the A. Ph. A.; the A. Ph. A. model pharmacy laws have been of great service in framing legislation in the several States of our Union; and now, always alert to the needs of the day, the interests of our returning warrior pharmacists are being finely served by the Association's Advisory Committee for soldier and sailor pharmacists.

This shows, sketchily and incompletely, what the American Pharmaceutical Association has done in the past and is doing in the present. How much more can it do in the future, if federation with national organizations and with State Associations is brought to pass?

COÖPERATION OF THE WAR SERVICE COMMITTEE OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The War Service Committee of the American Pharmaceutical Association, S. L. Hilton, chairman, supplied the French Ministry with quite a number of American pharmaceutical textbooks and standards. The American Society of Mechanical Engineers took the initiative in this work and the shipment was made by them. A letter acknowledging the contribution through Chairman S. L. Hilton follows:

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS,
No. 29 West Thirty-ninth Street,
New York, May 9, 1919.

MR. S. L. HILTON, *Chairman*,
War Service Committee, American Pharmaceutical Association,
Hutton & Hilton,
22nd & L Sts., N. W., Washington, D. C.

My Dear Sir:

To-day we are forwarding to the French Ministry via the American Embassy our third and probably our last shipment of United States Standards material which we have been collecting for the last two or three months.

The box containing the very generous contribution which was collected for us by your Committee forms a very large part of this shipment, and we desire to thank you very heartily for the very complete way in which you responded to our request for assistance in securing standard publications of this country.

Our delay in acknowledging your generous contribution has been due to two causes—first, we were desirous of examining this material personally, and second, we were desirous of delaying our shipment until all the material which we expected to receive had come to us. As our days at the office are very crowded these two conditions did not synchronize until a day or so ago.

Thanking you again for your assistance in this matter, we remain,

Yours very truly,

(Signed) C. B. LEPAGE, *Secretary*,
Standards and Technical Committees.

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 17.

PHILADELPHIA, PA., May 17, 1919.

To the Members of the Council:

Motion No. 24 (Presentation of Proceedings to N. A. B. P.), Motion No. 25 (Presentation of Complimentary Volumes of Year Books to Foreign Journals) and *Motion No. 26 (Election of Members; Applications Nos. 146 to 159, inclusive)*, have each received a majority of affirmative votes.

In Council Letter No. 13 a tentative program for the Sixty-seventh annual meeting of the American Pharmaceutical Association to be held at New York during the week of August 25, 1919, was submitted by the Committee on Program and suggestions invited.

The program as finally revised is now submitted, as follows:

PROGRAM FOR 67TH ANNUAL MEETING.

Monday, August 25.

9.30 A.M. National Association Boards of Pharmacy.
2.00 P.M. National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.
8.00 P.M. National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.

Tuesday, August 26.

9.00 A.M. Council Meeting.
National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.
3.00 P.M. First General Session of Association.
Committee on Nominations.
4.30 P.M. Scientific Section, first session.

Wednesday, August 27.

9.30 A.M. Section on Education and Legislation, first session.
Section on Practical Pharmacy and Dispensing, first session.
10.30 A.M. House of Delegates, first session.
Afternoon for Entertainment.
7.30 P.M. Council Meeting.
9.30 P.M. President's Reception.

Thursday, August 28.

9.30 A.M. Commercial Section, first session.
Historical Section, first session.
Scientific Section, second session.
10.30 A.M. Women's Section first session.
12.00 Noon Alumni Luncheon.
1.30 P.M. House of Delegates, second session.
2.30 P.M. Section on Education and Legislation, second session.
Section on Practical Pharmacy and Dispensing, second session.
4.00 P.M. Joint session of American Conference of Pharmaceutical Faculties and Section on Education and Legislation and Boards of Pharmacy.
4.30 P.M. Council Meeting.
8.00 P.M. Second General Session of Association.

Friday, August 29.

9.00 A.M. All-day Boat Ride.
10.00 A.M. Scientific Section, third session.
Commercial Section, second session.
11.00 A.M. Women's Section, second session.
(Three last named Sections will hold sessions on boat.)
3.00 P.M. Historical Section, Address by Dr. Henry Milton Whelpley.
7.00 P.M. Council Meeting (Reorganization Meeting).
8.30 P.M. Banquet.

Saturday, August 30.

9.00 A.M. Council Meeting.
10.00 A.M. Final General Session of Association.
1.30 P.M. Luncheon.
3.00 P.M. Seeing down-town New York.

Do you approve the above program? This will be regarded as *Motion No. 27 (Approval of Program for 1919 Annual Meeting)*.

Motion No. 28 (Election of Members). You are requested to vote on the following applications for membership:

No. 160. Harold Russell Waidelich, 142 N. 10th Street, Allentown, Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 161. Benjamin Franklin Merklee, 1724 North 16th Street, Phila., Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 162. Joseph A. Eppley, 1916 N. Marvine St., Philadelphia, Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 163. Maurice Weinberg, 1723 South 4th Street, Philadelphia, Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 164. Samuel Howard Price, 216 North 5th Street, Camden, N. J., rec. by Ivor Griffith and Charles H. LaWall.

No. 165. Lillian R. Stam, 110 S. 19th St., Philadelphia, Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 166. Russell S. Trumbower, 618 Columbia Ave., Lansdale, Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 167. A. Herbert Smith, Jr., 118 Main Street, Colwyn, Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 168. Joseph Pincus Seltzer, 2307 S. 7th Street, Phila., Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 169. Wesley Worrall, 143 Lancaster Ave., E. Downingtown, Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 170. J. Harry McCormick, The Drugcraft Co., Ann Arbor, Mich., rec. by C. H. Stocking and E. J. Kennedy.

No. 171. John J. Hughes, 79 McLean St., Wilkes-Barre, Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 172. Daniel T. Williams, 226 Blackman St., Wilkes-Barre, Pa., rec. by Ivor Griffith and Charles H. LaWall.

No. 173. Louis V. Middleton, 921 Ottawa Ave., N. W., Grand Rapids, Mich., rec. by Wm. Kirchgessner and Peter Vellema.

No. 174. Lt. Edward Roy McColl (MC), U. S. Naval Hospital, Gulfport, Miss., rec. by S. Wierzbicki and W. M. Benton.

No. 175. A. Richard Bliss, Jr., 94 N. Butler St., Atlanta, Ga., rec. by E. G. Eberle and Charles H. LaWall.

No. 176. David Krancer, 114 Floyd St., Brooklyn, N. Y., rec. by F. S. Hereth and K. A. Bartlett.

No. 177. Robert Watson Crabb, 145 Pierce St., W. Lafayette, Ind., rec. by C. B. Jordan and Chas. O. Lee.

No. 178. Hugh Hastings Hedgcock, Murdock Apts. No. 1, W. Lafayette, Ind., rec. by C. B. Jordan and Chas. O. Lee.

No. 179. Alfredo Sanchez Catala, General Gomez No. 49, Camaguey, Cuba., rec. by J. G. Diaz and José P. Alacán.

No. 180. Tholman C. Moss, 6th and Main Sts., Darby, Pa., rec. by Charles H. LaWall and J. W. Sturmer.

No. 181. John R. Randolph, 718 Penn St., Camden, N. J., rec. by Charles H. LaWall and Wm. L. Friedman.

No. 182. I. S. Weidman, 202 S. State St., Ephrata, Pa., rec. by Charles H. LaWall and J. W. Sturmer.

No. 183. John L. Baker, 84 S. Pine St., Hazleton, Pa., rec. by Wm. L. Friedman and Charles H. LaWall.

No. 184. William S. Kollor, Main St. and Butler Ave., Ambler, Pa., rec. by Charles H. LaWall and J. W. Sturmer.

No. 185. William Barton Graham, 44 Genard St., E., Toronto, Ont., rec. by Charles F. Heebner and R. O. Hurst.

No. 186. Marvin M. McCord, 106 W. Rand St., Enid, Okla., rec. by J. C. Burton and Wm. B. Day.

No. 187. William F. Dodd, Caddo, Okla., rec. by J. C. Burton and Wm. B. Day.

No. 188. Clifford H. Beach, Occoquan, Va., rec. by C. F. Walker and Wortley F. Rudd.

No. 189. Edward Claudius Wilson, 1635 Willoughby Ave., Norfolk, Va., rec. by Chas. F. Walker and W. F. Rudd.

No. 190. J. W. Williamson, Harrisonburg, Va., rec. by Wortley F. Rudd and Albert Bolenbaugh.

No. 191. Samuel L. Baker, 1300 So. Lawndale Ave., Chicago, Ill., rec. by Wm. Gray and Wm. B. Day.

No. 192. Bernardo Restrepo, Sorin Hall, Notre Dame, Ind., rec. by R. L. Greene and Joseph Maguire.

No. 193. William Benjamin Moody, Boston, Ga., rec. by R. Thomas and H. H. Melton.

No. 194. H. Lawrence Barnes, The Rexall Store, Waukegan, Ill., rec. by H. C. Christensen and Wm. B. Day.

No. 195. William A. Kaminski, 1135 McDougall Ave., Detroit, Mich., rec. by F. F. Ingram, Jr., and Leonard A. Seltzer.

No. 196. William H. Gesell, 235 Christopher St., Montclair, N. J., rec. by J. W. England and E. G. Eberle.

J. W. ENGLAND,
415 N. 33RD STREET. *Secretary.*

COMMITTEE REPORTS

MINUTES OF THE JOINT MEETING OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES WITH THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY, CHICAGO, ILLINOIS, AUGUST 13, 1918.

The joint meeting of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy was called to order at 2.40 o'clock P.M., Tuesday, August 13, 1918, by President W. P. Porterfield, of the National Association of Boards of Pharmacy.

The first report was that of the Joint Committee on Examination Questions, which was submitted by the Chairman, Prof. C. B. Jordan; it follows:

REPORT OF THE COMMITTEE ON EXAMINATION QUESTIONS.

For a number of years the work of this committee has been in charge of Dr. Henry Kraemer and he perfected a good organization and would have accomplished a great deal if he had continued in the work. Unfortunately, he felt that as President he could not give the work of the Committee his attention and, therefore, turned it over to us, and we have endeavored to carry out his ideas.

The Committee was organized into six sub-sections, as follows: 1. Pharmacy and Dispensing; 2. Commerical and Legal Pharmacy; 3. Physics and Chemistry; 4. Botany and Pharmacognosy; 5. Physiology and Pharmacology; 6. Bacteriology and Immunology.

Each sub-section elected its own sub-chairman as follows: 1. Pharmacy and Dispensing, E. A. Ruddiman. 2. Commercial and Legal Pharmacy, C. O. Lee. 3. Physics and Chemistry, C. B. Jordan. 4. Botany and Pharmacognosy, E. L. Newcomb. 5. Physiology and Pharmacology, Dr. Bernard Fantus. 6. Bacteriology and Immunology, E. N. Gathercoal.

Each sub-chairman received the following statement regarding the scope of the work to be covered:

"Questions are the best index of what is being taught in the Colleges of Pharmacy. We are interested in a study of what might be called fundamentals, leaving it to the teachers, individually, to develop their courses as they may deem proper. There are other subjects that could be handled, as, the discussion of the value of lecture, laboratory work, methods of teaching, methods of examination, rating of questions and anything else which would add to the efficiency of the teacher."

The members of each sub-section have been studying the problems involved in their special branch of the work. The report of this Committee consists of the reports of the several sub-committees, together with criticisms of questions that were submitted to the General Committee before it was divided into sections. Dr. W. C. Anderson will criticize the questions on Pharmacy; Dr. C. A. Dye those on Botany, Materia Medica, Pharmacognosy and Bacteriology, and I will criticize those on Chemistry.

(Signed) C. B. JORDAN.

Prof. C. A. Dye presented his criticisms as follows:

On going over the various groups of questions one cannot fail to notice a marked difference in the degree of detail with which the lists are covered. Some are evidently based on the general idea of thoroughly covering the subject in a very practical manner, leaving out the non-essentials. Others evidently followed the Syllabus very closely, going into all the minute details of the subject. It therefore seems to me that we should decide whether or not the questions should be based on the Syllabus in its entirety or simply a thorough practical covering of the subject. The Syllabus, as I understand it, attempts to cover a given subject in a thorough manner, giving, as it were, a synopsis upon which the lectures may be based, the degree to which this shall be followed depending upon the judgment of the instructor and the time allotted.

This in itself is all well and good, but I should like to know how many schools are able to go into any given subject as exhaustively as the Syllabus would indicate in the time allotted each subject. Then when we take into consideration the fact that many schools only put in three days a week on the work, I fail to see how they can hope to discuss the details very thoroughly. At best they can hardly hope that the students will do more than learn a lot of defini-

tions which will be forgotten as soon as they leave school or in many cases by the time they are out of the classroom. For this reason I fail to see any practical use in burdening the list with a lot of questions dealing with theoretical details and having little practical value. We all know that the time we have is entirely too short to even master the essentials.

There appears to be an overlapping of some of the lists, especially the botany and materia medica, the botany and pharmacognosy and the pharmacognosy and materia medica. This, however, is to be expected in those schools where these subjects are more or less closely associated. Neither of these features is serious, however, and can easily be remedied when the questions are gone over for the final assignment.

Another point that occurs to me is that there is a large number of questions devoted to little used and non-essential drugs. This appears to be due to the desire to develop questions, cover everything, and give the impression that all such are thoroughly discussed. If these are discussed, the study and discussion must be very superficial and elementary, since the time assigned to such subjects is not sufficient to permit of a very thorough discussion. And here again the thought comes, is this necessary, or could we not better occupy our time with things more fundamental? I know this idea does not find favor with some of the members, and we may differ very materially in our ideas as to what drugs should be considered as essential, but the fact remains that many of them find little use and others purely local use.

Again it would seem that entirely too much ground is covered by the questions in botany. So much detail is of course quite necessary if botany is to be made a major subject, but as it is, and the way things are going, it seems hardly necessary. Many of the questions must simply be covered by "set definitions," and as such are meaningless to the candidate and only serve to burden him with a lot of non-essentials. No wonder the schools are criticized by the Boards for turning out men ignorant of the simplest essentials in pharmacy, chemistry and other branches when we take their time in trying to fill them with a lot of stock definitions. It surely is time that we awaken to a realization of the fact that the tree of pharmaceutical instruction has a great many branches that need sharp pruning if it is to continue producing fine fruit.

It also seems unfortunate that so little time and so few questions are devoted to physiology. It is of course possible that the list I received was not representative. But even so, the questions that appeared apparently were not formulated with the idea of creating much thought or enthusiasm on the part of the student as to the real value and application of physiology to everyday life or its value in explaining the action of drugs. Indeed, one of the subjects that is of vital interest and concern to us all, and without a knowledge of which we cannot explain the action of many agents, is dismissed with little or no ceremony. If we are to judge from the questions, it is a great deal more important to know whether the calyx is "cad-u-cous" or "deciduous" than to know the normal body temperature or heart rate and how these are affected.

While I may have some very decided views on certain groups or individual questions, and the importance apparently attached to one group as compared with another, I believe as a whole they are well worth while. The idea is a good one in that it will tend to bring about uniformity, and will undoubtedly have a tendency to raise the standard of the Boards, and with these raised the schools must follow with higher standards and better teaching facilities. The first set of questions will no doubt be severely criticized, and most of us will probably think we could have prepared a better one; nevertheless, out of all this effort must eventually come something well worth while.

Dr. W. C. Anderson presented the following:

REPORT OF THE SECTION ON PHARMACY AND DISPENSING.

Prepared by Edsel A. Ruddiman, Chairman.

As temporary Chairman the writer sent out letters asking for nominations for permanent Chairman; the vote resulted in the election of the writer.

Letters making some suggestions and asking for others were sent to each member of the Committee. As a result, a list of six topics for discussion was made out, which list with a summary of the discussions is given below:

Subject 1.—"To what extent should students be required to memorize formulas and methods of making U. S. P. and N. F. preparations? What is to be gained by memorizing them? What information should the student have about each preparation made in the laboratory?"

The summary of the discussions represents the opinion of the majority of those who took part, though there was naturally some disagreement.

It is the general opinion that the student should remember type processes; that he should remember the presence in a formula of such agents as are likely to cause incompatibility when preparations are mixed; that he should remember the percents or amounts of potent ingredients, but that he should not be required to learn the complete formula with the idea of making up preparations from memory, in fact he should be discouraged from doing so; that he should know the chemical reactions, if any; and particular stress should be placed on the reasons for the different steps in the methods of making.

In regard to preparations made in the laboratory, the student should know the official name and synonyms, the official definition, the ingredients and the percent of the active ones, the reasons for each step, the reactions if any, the best way of preserving and any change that may take place on long storing, and the dose. In other words, he should know everything that is to be known. It is also suggested that he should know the cost of the home-made product compared with the purchased one.

Subject 2.—"How may we get greater uniformity in questions asked?"

Several members of the Committee suggest that the instructors send to the Chairman the questions which are actually asked in examinations, that these be classified and a copy of all questions returned to each member of the Committee for study and comment. It is also suggested that the Chairman send out a list of certain classes of preparations and ask that each member of the Committee write out questions on these preparations, that these questions be published, and then other classes be taken up, going through the U. S. P. and N. F.

With perhaps the exception of one set of questions, all those sent to the Chairman were evidently questions which had actually been used in examinations.

It was the intention of the Chairman, when he sent out the requests for examinations, to get questions on both pharmacy and dispensing. Most of the members respondjng sent questions on pharmacy, but only a few questions which would come directly under the head of dispensing. In this first effort to classify the questions, the Chairman decided to incorporate only those which have a direct bearing on the U. S. P. and N. F. preparations, and chiefly those preparations for which a formula is given, leaving out, for the present at least, the questions which bear on assay processes, doses, uses, physical properties of chemicals and drugs, incompatibilities, and prescriptions. In grouping these questions the wording was slightly changed in a few minor cases, but so far as possible the original wording of the examiner is given.

Subject 3.—"Should we in our daily work strive to encourage the student to prepare himself so that he may be able to manufacture a limited number of proprietaries of his own? If so, what lines do you suggest?"

The members of the Committee are practically unanimous in advising that the student should be capable of making a limited number of proprietaries and that these remedies should be limited to toilet articles, cough preparations, corn remedies, cleansers and polishes, flavoring extracts, veterinary remedies and dips, and preparations of a similar nature. A few members advise the making of any or all kinds of proprietaries, and one objects to the making of any proprietaries.

Subject 4.—"Please give a list of those U. S. P. and N. F. preparations which each student is generally required to make in the laboratory."

The number of preparations made in the schools varies greatly. The only way to remedy this is to get a greater uniformity in the length of the course given. The U. S. P. and N. F. preparations selected for making in the laboratory also shows variation, there not being any one preparation that is made by all of the schools reporting.

Subject 5.—"*a.* What is the best method you have found for teaching students how to compound prescriptions? This included incompatibilities. *b.* Approximately how many prescriptions is each student expected to fill? *c.* In case of incompatibility, is the student taught how to determine experimentally what the trouble is—what the precipitate is if one is formed? *d.* Is an examination given on reading poorly written prescriptions?"

It is difficult to summarize the discussion on this subject.

Subject 6.—A discussion of the underlying principles which should govern Boards of Pharmacy in framing questions.

The majority of those discussing this subject are of the opinion that the Boards of Pharmacy should so word the questions that the answers may be comparatively short and yet will require some reasoning on the part of the applicant for registration; that questions asking for the whys and wherefores are particularly good; that it is not advisable to use questions which can be answered by Yes or No; that it is not advisable to word questions in a way that will admit of long or rambling discussion; and that the questions should cover a wide range. In the discussions varying phases are brought out, and members of Boards of Pharmacy may find some valuable suggestions.

Dr. E. L. Newcomb presented the following report of progress for the Section on Botany and Pharmacognosy:

TOPICS AND SUGGESTIONS PROPOSED BY THE SECTION ON BOTANY AND PHARMACOGNOSY.

General.

I. Discuss the need for comprehensive botanical and pharmacognostical training on the part of pharmacists in order that they may keep abreast of the rapid advances which are being made in organic, physical, and plant chemistry; pharmacology; clinical medicine. and other closely allied sciences.

II. Does not a logical and sequent consideration of pharmaceutical botany and pharmacognosy dictate that the plants most simple in form, structure and function should be taken up for study first? Is this scientific and logical system of study being generally adopted?

III. To what extent should the subject of Ecology be discussed with students in pharmacy? Should they be given any field work in this subject?

IV. How can the medicinal Plant Garden be made of greatest value in connection with the teaching of pharmaceutical botany and pharmacognosy? Give an outline of the use which may be made of the garden during the spring and fall. Discuss the value of the greenhouse as an adjunct to the teaching of these courses. Formulate five type questions relative to instruction given in the garden or greenhouse.

V. Give an outline of what you consider to be essential instruction on the compound microscope, its care and use. Why is it of fundamental importance that the student should become familiar with this instrument and early use the ocular micrometer in the study of plants? Should the use of microscopical accessories, such as the polariscope, warm stage, special eye pieces, microspectroscope, binocular, etc., be explained before work in which they are involved is introduced? Is the time not at hand when all students should be required to purchase a compound microscope as a part of their laboratory equipment?

Pharmaceutical Botany.

VI. *Thallophytes.*—Schizophyceae, Schizomycetes, Chlorophyceae, Phaeophyceae, Rhodophyceae, Diatoms, Lichens, Phycomycetes, Ascomycetes, Basidiomycetes, Fungi Imperfecti.

(1) How much didactic and laboratory time should be devoted to the study of this group? (2) Outline what you consider to be a satisfactory course on this group, and state what illustrative and demonstrative material to use. (3) Formulate a set of questions which will illustrate what you consider to be the most essential parts of the subject. (4) Discuss the different values which a thorough understanding of this group of plants has for the pharmacist.

VII. *Archegoniates.*—Hepaticae, Musci, Filicales, Equisetales, Lycopodiales.

Discuss this group as indicated by the outline given under Thallophytes.

VIII. *Spermophytes.*—Gymnosperms, Angiosperms.

(1) Outline what you consider to be a satisfactory method for teaching the life history of this group. What illustrative material is used in connection with laboratory work? (2) Formulate a set of questions which will illustrate what you consider to be the most essential parts of the subject. (3) Discuss the scientific and practical value which the purely botanical study of the life histories of this group has for the pharmacist. (4) At what time should the following subjects be discussed with the pharmaceutical student: evolution, paleontology, environment, natural selection, mutation, Mendel's law, etc.?

The Study of Cell Contents.

IX. Should this instruction be given during the first year and does it logically follow the courses on plant groups?

X. How much time should be devoted to the study of protoplasmic cell contents—what material do you find well adapted for the laboratory work and what is the value to the pharmacist of a knowledge of this subject?

XI. Outline what you consider to be a sufficient amount of work on the starches and inulin. Name the starches and inulin-containing material to be used and formulate five questions on the same.

XII. Outline the instruction which you consider adequate and formulate questions on each of the following substances: sugars, alkaloids, glucosides, plant coloring principles, calcium oxalate, plant proteins. Enumerate the material used for the laboratory work.

XIII. Outline work and enumerate material to be used for study of: silica; tannin; fixed oils; fats and waxes; mucilages; gums; volatile oils and resins; latex, and ferments.

XIV. Discuss the fundamental importance to the pharmacist of a knowledge of the subjects mentioned in XI, XII, XIII.

The Study of Plant Cells.

XV. Discuss the work which you think should be given on the origin and composition of the cell wall. Present a list of the illustrative material to be used. Formulate five (5) questions on the work.

XVI. Outline the instruction which you give on parenchyma and mechanical cells. Enumerate the illustrative material used for laboratory work. Formulate ten questions on this subject.

XVII. Outline the instruction which you give on conducting and protecting cells. Enumerate material used and formulate ten questions on the same.

XVIII. Discuss the fundamental importance to the pharmacist of a thorough knowledge of the nature of plant cells and by example illustrate this importance.

Outer Morphology and Inner Structure.

XIX. (1) Is the study of the structure of plants along with outer morphology the best plan? (2) Enumerate the illustrative material which you have used for giving laboratory instruction on the outer morphology of the following: root, stem, leaf, flower, fruit, and seed. (3) Enumerate illustrated material most suitable for the study of the inner structure of the above named plant parts. (4) Formulate a set of ten questions on outer morphology and ten on the inner structure of plant parts.

Plant Classification and Physiology.

XX. (1) How much work should be done on plant identification and classification? (2) What is your plan of procedure with this work? (3) Discuss the value to the retail pharmacist of ability to identify plant specimens. (4) Formulate a set of ten questions on this subject.

XXI. Outline what you consider to be the proper amount of didactic and laboratory work on—root pressure, photosynthesis, transpiration, geotropism, heliotropism, factors influencing growth, organic and inorganic soil constituents, etc. Prepare ten questions on this subject.

PHARMACOGNOSY.

XXII. *Drug Identification.*—(1) What method of instruction have you found most valuable in teaching the student how to identify crude vegetable drugs? (2) How many vegetable drugs in addition to those included in the U. S. P. and N. F. should the student be expected to know by sight? (3) Do you give each student a sample of every U. S. P. and N. F. drug? (4) Should the following concerning each drug be taken up in connection with the work on identification when the student has the drug specimen in hand: Latin title, English title, synonyms, name of plant yielding the drug, family to which the plant belongs, etymology, part of the plant represented by the drug, habitat and general character of the plant, commercial source of the drug and constituents? (5) What kind of an examination do you conduct to determine the students' ability to identify drugs and give the facts enumerated in (4)?

XXIII. *Extended Pharmacognostic Study*—(1) Would it be advisable for all colleges to devote the time for this extended study to the same drugs; if so, should this committee enumerate a list of the drugs to be taken up in this more comprehensive way? (2) Enumerate the drugs

which you feel should be studied in great detail. (3) What suggestions can you offer for improvement in the following outline for the comprehensive study of a vegetable drug: (*a*) Official title of drug—U. S. P. definition—synonyms—etymology. (*b*) Latin and English names of the plant—synonyms—etymology. (*c*) Systematic botanical position of the plant. (*d*) Systematic morphological description of the plant, including drawings from living plants from the garden or greenhouse of parts used for the preparation of the drug. (*e*) Occurrence and propagation of the plant—culture of the plant—effect of cultivation—production of the drug—collection and preparation (the greenhouse, garden and drug drying laboratory used extensively for this work.) (*f*) Commercial channels through which drug is marketed—commercial varieties—methods of packing. (*g*) Description of the commercial drug including, when possible, a comparison with the material from the garden—morphological description—anatomical description—powder description—odor and taste—application of micro-chemical tests, pyro-analytical methods, microscopical accessories, etc., where applicable. (*h*) Detection of admixture and adulteration—pharmacognostic valuation. (*i*) Similar or parallel drugs. (*j*) History (if time permits). (*k*) Examination of important powdered drugs from previous lessons as unknowns. (*l*) Review, consisting of a set of home study questions. (4) Would it be advisable for Boards of Pharmacy to adopt a uniform list of the more important drugs upon which questions and microscopical work involving study as outlined above might be asked? (5) Formulate ten questions suitable for use following the intensive study of what you consider to be five important drugs.

XXIV. *Advanced Pharmacognosy.*—(1) Discuss the teaching of this subject—outline what you believe should be included in the course. (2) Discuss the value of this work to the retail pharmacist. (3) Formulate ten questions on advanced pharmacognosy.

XXV. *Field Work.*—(1) Outline the method which you use for instructing students while on field trips. (2) Discuss the value which such trips have for the practising pharmacist. (3) Formulate ten questions on field trip work. (4) How many field trips do you consider advisable? (5) Should herbarium work be a part of this course?

XXVI. *Equipment for Pharmacognosy.*—(1) Discuss the equipment you consider necessary for the proper teaching of pharmacognosy and pharmaceutical botany.

In response to a request of Professor Henry Kraemer, Dr. Newcomb also gave a synopsis of a paper which he had prepared on the subject of Digitalis.

REPORT OF THE SECTION ON PHYSIOLOGY AND PHARMACOLOGY (INCLUDING BIO-ASSAY) OF COMMITTEE ON QUESTIONS AND EXAMINATIONS OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

By Dr. Bernard Fantus.

This report has been prepared after correspondence with the various members of the committee, a canvass of the custom prevailing in the schools of pharmacy of the United States, and consultation with many teachers regarding ideal courses to be aimed at. Twenty-two schools responded to the Questionnaire sent out.

All these schools, with one exception (the University of Wisconsin), teach physiology, though two schools teach physiology only in the four-year course. The remaining nineteen schools give an average of 35 hours in lectures, and 15 hours in recitations. Laboratory work in physiology is given by only five institutions, the hours devoted to it ranging from 32 in three schools to 108 hours at the University of Nebraska. Only one school mentions demonstrations. We may conclude that practically all the schools recognize the desirability of teaching physiology, at least in the form of didactic work.

It is impossible to analyze satisfactorily the replies regarding the teaching of pharmacodynamics. This term, which covers the study of the action of drugs, was purposely selected in this inquiry to differentiate this study from that of pharmacology, which might include anything pertaining to drugs. Eight schools among the twenty-two give no work in pharmacodynamics. Most of the others reported that from 48 to 60 hours are devoted to this study. However, it is evident from the reports that, in most cases, the instruction is given as part of the course on materia medica, which, as we all know, merely means the enumeration of the therapeutic uses of the drug. Four schools give laboratory work in pharmacodynamics, with the time devoted to it ranging from 18 to 108 hours. One school in addition speaks of 15 hours' demonstration. Real instruction in pharmacodynamics is, therefore, given in only very few of the schools of pharmacy in this country.

Work in bio-assay is carried on in six of the schools that have responded. In the two-year course, from 12 to 15 hours of laboratory work or demonstrations are allotted it in three of these schools. Three schools give more extensive laboratory courses, ranging from 45 to 108 hours in the three- and four-year courses. Mere lectures are evidently considered undesirable in the teaching of bio-assay.

DISCUSSION.

From the returns of this inquiry it is evident that the greatest possible divergence of custom in the teaching of the branches of instruction investigated by this committee prevails among the various schools of pharmacy: from none given at the University of Wisconsin to 252 hours each in physiology and pharmacodynamics at the University of Nebraska. Similarly does opinion vary regarding the ideal courses for schools of pharmacy in these branches. Thus, while Professor Kremers, of the University of Wisconsin, says: "We have no right to take the time necessary for satisfactory courses, in each of these branches, from the studies now given in our two-year course," Professor Sayre believes that, "to meet the demands of future pharmacists, an ideal course will certainly approximate, if not actually equal, the courses now given in these subjects in our best medical schools. So far as bio-assay is concerned," he says, "we should give far more attention to this than medical schools do."

The only manner in which these conflicting opinions of the experts consulted can be reconciled is by assuming that they look upon the aims of pharmaceutical education from diametrically opposite standpoints. Obviously, those who believe that no instruction in these branches should be offered have in mind the present-day druggist, whose work is chiefly commercial, and hardly at all scientific. Those, on the other hand, who advocate thorough and complete courses in these branches, have in mind the higher professional training of pharmacists, which seems to be the general trend of the majority of the schools.

It may well be questioned what this trend towards higher pharmaceutical education is leading us to, for upon the desirability or the undesirability of this depends in a large measure the final disposition that will and ought to be made of the branches under discussion. An unbiased observer, noting the kind of work that practically all the graduates of pharmacy are called upon to do in the drug store, cannot but deplore the fact that the present-day training does not really fit them for their life's work. Courses in bookkeeping and business methods, and the studies of the numerous sundries and other articles besides drugs that constitute the chief bulk of the business are hardly touched upon in the schools. On the other hand, drug assay, detection of adulterations, the making of complicated galenicals, the preparation of chemicals, etc., upon which most of the time of the student in present-day schools of pharmacy is spent, are practically useless to ordinary druggists. It must also be admitted that the strictly professional pharmacist, he who limits his practise exclusively to prescription work, belongs to an almost extinct species and this for a good reason, namely, that his chances for making a livelihood in the struggle for existence are admittedly rather poor. It would seem, therefore, that the above-mentioned trend toward higher pharmaceutical education is a mistake, unless it contemplates and distinctly recognizes the great change that has taken place in medical practise. We may as well admit that doctors are writing fewer and simpler prescriptions, and that this tendency is bound to become increasingly manifest as the older doctors leave the field of practise to the products of modern medical schools. This means that professional pharmacy is on the down-grade, unless the pharmacist is willing to equip himself to serve as a complete laboratory-man in medicine, that is, unless he is prepared to combine diagnostic-laboratory technic with the therapeutic-laboratory methods he now practises in the compounding of prescriptions.

Inasmuch as the modern trend of medical practise is in the direction of requiring more of diagnostic than of therapeutic laboratory work, the field of practise for a pharmacist equipped to do all this work is great and bound to become increasingly greater. That this is so may, for example, be gathered from the following quotation from E. P. Joslin's "Diabetic Manual," (Lea and Febiger, 1918): "Examination of the urine should cost the patient little. Formerly, I deprecated the routine examinations made in drug stores, but now I welcome them. The druggist is a trained chemist. He is constantly doing quantitative work, and it is far easier and cheaper for him to examine a urine than for a doctor. Druggists will undoubtedly undertake such work with satisfaction. It will be an agreeable relief from the many activities in a drug

store which have nothing to do with the profession of a pharmacologist." And, it might be added, it would also be an agreeable relief to the doctor.

While it may be admitted that there are at present practically no individuals who do such work, it must also be pointed out that such individuals are not available. The medical laboratory work is at the present time done by medical practitioners, many of whom, when they first undertook this work, were not as well equipped for it as would be the average graduate of a good school of pharmacy. For pharmacists to become recognized as competent in this field of work, and to obtain and merit the confidence of the medical profession, short courses in urinalysis, etc., would not suffice; but a training would have to be required no less extensive than that which fits for medical practise, though it ought to be, to a certain extent, of a different type. With a preliminary and a theoretic training exactly like that of the physician, which would include two years of university work in chemistry, physics, biology and language, and the first two years of a medical course, excepting anatomy, a pharmacist who aims to become a medical laboratory man ought to have the opportunity of devoting the other two years of study entirely to perfecting himself in laboratory technic in its various branches, including microscopic and chemical diagnosis, bacteriologic manipulations and pathologic and immunologic technic, in addition to a thorough understanding of pharmaceutical principles and practise. Such a man would, of course, get as thorough a training in physiology and in pharmacodynamics as the medical student, and a much more extensive training than he in pharmacy, materia medica, and bio-assay. The drug merchant, on the other hand, needs little or none of this training. For him, very brief courses, at most, in these subjects are all that are justifiable.

It is therefore the opinion of this committee that, before it can arrive at a serious recommendation regarding the teaching of the branches under discussion, it is necessary that it be instructed what the aim of pharmaceutic education is; for, while the present-day druggist needs but a minimum of instruction in these branches, the pharmacist of the future would require elaborate courses. It is, however, evident to the committee, that even the present-day druggist should have a certain amount of intelligence in regard to the teachings of modern pharmacodynamics. To merely mention the uses of drugs in connection with the study of materia medica, as is done at the present time, leads the student to the erroneous opinion that drugs in general have specific actions and uses. The fact that drugs are merely natural resources, capable of harming or helping according to the manner in which they are used, cannot be appreciated by anyone who does not have at least a smattering of pharmacodynamics. Hence, a brief course on elementary pharmacodynamics should be introduced into all schools of pharmacy. Such course might possibly be combined with that of physiology, where conditions are favorable for such a merger. A brief study of bio-assay might be included in the course on pharmacodynamics, preferably in the form of demonstrations.

L. E. SAYRE: I have believed for many years that we should have training along this line of pharmacology and have tried to introduce that work in the University of Kansas. We know from practical experience that in many cases it has resulted in not only a success professionally, but financially. A young man came to me some years ago and said: "I am tired of the soda water, cigars and lunch counter business. I will go out of the drug business rather than go into that kind of business." I said to him, "Cut loose; equip a good laboratory, and go into this work as a business."

This young man located in a city of about 250,000 inhabitants; two years afterwards I visited him and was surprised to find him located on one of the business corners of the town; he had a very large store, beautifully equipped; no soda fountain or cigar counter. He had a large laboratory and was making a wonderful success.

THE REPORT OF THE SECTION ON COMMERCIAL AND LEGAL PHARMACY.

By Prof. C. O. Lee.

The work of the sub-section was organized as follows:

1. Each member of the committee was asked: (*a*) to discuss seven general topics bearing upon the teaching of Commercial and Legal Pharmacy; (*b*) to discuss any other topics pertaining to Commercial and Legal Pharmacy not incorporated in the topics suggested.

2. Each member was asked: (*a*) to submit 24 copies of twenty questions representative of the work covered in Commercial Pharmacy in his school; (*b*) to submit 24 copies of ten questions representative of the work covered in Legal Pharmacy in his school.

The chairman received no reply of any kind from eight of the twenty-four members of this sub-section. Of those replying, four sent only letters, eleven replied by discussing the seven general topics suggested. Of these five submitted the questions on Commercial Pharmacy, but only four submitted 24 copies of their questions. Of these also four submitted questions on Legal Pharmacy, but only two furnished 24 copies of their questions. One furnished an unselected lot of questions, that had been used in examinations.

The seven general topics, as previously suggested, will be submitted together with a summary of the discussion on each.

1. (*a*) Should our committee recommend how much time should be given to the study of Commercial Pharmacy? (*b*) How much time shall we recommend to be given to this course?

To (*a*) above, seven favored a recommendation from this committee; two favored the time recommended in the *Syllabus;* one was doubtful, and one was opposed to such a recommendation.

To (*b*) above one recommended 30 hours; one 60 hours; one 120 hours; one 150 hours to 200 hours; one 480 hours; one 75 hours; two that no time should be given to this course; three doubtful as to the number of hours that should be given to this subject.

2. What subjects should be taught in a course in Commercial Pharmacy? How much time should be given to the teaching of such course?

To this, two suggested following the *Syllabus;* one suggested that only commercial arithmetic be offered; one made no reply; one suggested 30 hours to store management, 10 hours to legal pharmacy, 30 hours to commercial arithmetic, and 50 hours to various phases of salesmanship, total of 120 hours; one suggested 6 hours to economics, 6 hours to accounting, and 6 hours to business law, 3 hours to business organization, and 2 hours each to marketing and advertising; one suggested 3 hours per week for one semester for each of the following subjects: accounting, salesmanship, advertising, principles of economics, commercial geography, principles of psychology and principles of sociology and 2 hours per week for one semester on each, commercial law and office organization; five were doubtful.

3. Should the teaching of Commercial and Legal Pharmacy be anything more than theoretical? Should there be laboratory or practice work; if so, how much time should be given to each?

In reply, three would make the course wholly theoretical; four would make the course theoretical with some practical work, where possible; two were doubtful; two said *no*.

4. In order to fit out students to better understand society and the individual, should a course in Applied Psychology be a part of the course in Commercial Pharmacy?

To this five were favorable in various respects; one entirely opposed; five undecided.

5. Should Commercial Pharmacy be taught by a man engaged in business, or is a man of recent business experience sufficiently qualified to teach the subject, provided his educational qualifications are satisfactory? To this one was indifferent; ten preferred to have this subject taught by a man of business experience and a theoretical knowledge of the subject.

6. Should the State Boards of Pharmacy, in examining candidates for registration, ask questions upon the subjects of (*a*) Commercial Pharmacy, (*b*) Legal Pharmacy?

To this five were in favor of the Board asking questions on Commercial Pharmacy; six were opposed. As to Legal Pharmacy, seven favored the Board asking questions in examinations and three were opposed.

7. Should instruction in Legal Pharmacy be given by a man trained in law, or by a pharmacist, or by men from both professions in coöperation?

To this one did not reply; four favored lawyers only; six favored some form of coöperative work.

8. Copies of the questions as submitted on Commercial Pharmacy attached.

9. Copies of the questions as submitted on Legal Pharmacy attached.

SUMMARY.

In reviewing the results of the work of this Section, the chairman regrets that only about one-half the members responded to the efforts of the committee. Those responding confined their discussions largely to the topics as suggested in the letter from the chairman.

The time suggested for the course in Commercial Pharmacy ranges from no time at all

to 40 percent of the time of the pharmacy course. The subjects suggested range from commercial arithmetic to courses in accounting and economics, and most generally including a study of salesmanship, advertising and store management. It is largely agreed that such subjects should be taught theoretically with laboratory or practice work where the latter could be offered to advantage. Some emphasized the necessity of real practical work. As to applied psychology, many favored some phases of it, others were not clear as to the importance of the subject. It seemed to be a general opinion that men of experience and education should teach the subjects of Commercial and Legal Pharmacy.

As to Boards of Pharmacy asking questions on Commercial Pharmacy, more opposed the idea than favored it, but that the Board should ask questions of legal concern was generally favored.

It was the original plan of the chairman to submit copies of all questions received to each member of the committee, but so few submitted questions, and fewer submitted the required number of copies, that the plan was abandoned, and the copies submitted are attached to this report for general consideration.

CONCLUSIONS.

The limited amount of work that this committee has done reveals a very great lack of uniformity in presenting the subjects of Commercial and Legal Pharmacy in our schools, especially Commercial Pharmacy. There is a very great difference of opinion as to the number of hours that should be given to these subjects, as well as to the subject matter and the manner of presenting it.

If these courses are to be a part of our college curricula there is great need for their standardization. Some have suggested that the courses as outlined in the *Syllabus* are comprehensive enough. This may all be true but the *Syllabus* does not seem to serve as a guide to the teaching of these courses, where taught, and some schools have no Commercial Pharmacy courses.

A majority of the questions on Legal Pharmacy are comprehensive and present the subject fairly well, but the questions on Commercial Pharmacy are largely arithmetical. This may all be well and good, but the arithmetic or the system of bookkeeping is a small part in the making of an efficient pharmacist as compared with the more comprehensive fundamental principles that underlie good business methods, good salesmanship, good citizenship, and good professional service.

A clerk needs to know how to price goods and figure profits, but he needs more to know that good business is more than profits, in dollars and cents. He needs to know that a good salesman not only receives the customer's money but his confidence as well, and that he, a clerk, is a citizen, and as a professional man is expected to render honest expert service. We fail to teach our students that they are a certain part of a great complex society in which each individual has a definite moral, social and professional task to perform.

Your sub-section reports progress but does not feel that it can at this time make any recommendations. It is hoped that the work of this sub-section will be continued.

Dean Frederick J. Wulling then read a paper entitled *More Consistent Pharmaceutical Standards*, which was published in the September, 1918, number of the JOURNAL OF THE A. PH. A., pp. 795–799.

H. L. MEREDITH: I want to resent the statement that "the pharmacists are not fit to help this Government in this war."

DEAN WULLING: We all dissent from that. I did not make that statement.

H. L. MEREDITH: I understood that it was a quoted statement, but when I see boys taken into the army who are dead from their shoulders up, and commissioned lieutenants and captains, and whose duties are to look after the condition of tires on automobiles—when I see vehicular surgeons brought into the army as captains for the purpose of looking after the mules and horses which are built by Henry Ford—I resent the suggestion that our men are not intelligent enough to be called into consultation.

Down home we had a boy, the extent of whose knowledge and experience was to wash cars, who is a lieutenant in the army today. We have another man who was working in a shoe house and he is a captain; yet they say that pharmacists are not intelligent enough to help prosecute this war. I resent that.

The people of the United States are not opposed to pharmacists participating in this war. Tell the fathers and mothers of the boys who are enlisted what kind of service they are getting in the Army today and they will rise up as one man. In at least one camp a bartender has charge of the dispensary. Should the parents of the boys investigate they will want to know why, and the first answer is, that the pharmacist isn't patriotic enough. I know a man who is in a machine gun crew in France because he would not serve in Camp Meade under a bartender who knew nothing about pharmacy. It is time for us to speak out and assert ourselves. I don't believe in going only to the Surgeon-General, we should go to the public as our President does.

Dean Wulling says the Boards should establish the prerequisite requirements. The National Association of Boards of Pharmacy can hardly do that until the faculties standardize their own colleges. If the colleges don't do that, and the National Association of Boards of Pharmacy does establish a prerequisite requirement, the only alternative is for the National Association of Boards of Pharmacy to establish a standard for colleges of pharmacy which they will recognize. I think the colleges should coöperate in this work.

CHARLES W. HOLZHAUER: There is one statement in Dr. Wulling's paper which I should like to be informed about. I was under the impression that the ethical stores were on the decrease for the simple reason that a man can't make a living, in the East, anyway, by confining his business to the filling of prescriptions and laboratory work. I would like to be corrected, if I am wrong.

PROFESSOR KOCH: They have been on the increase in Pittsburgh.

H. C. CHRISTENSEN: Ethical stores are on the increase. I have travelled in nearly every State in the past year, and particularly in the Northwest, on which Dr. Wulling's statement is based.

L. E. SAYRE: I would like to ask Dean Wulling upon what basis the statement is made that the intelligence of the druggists, as the representatives at Washington see it, is insufficient to be of any service.

F. J. WULLING: I am sorry Doctor Sayre asked that question because everybody has answered it for himself. We do not need anyone to make a statement like that at all. Just take the action, and the action, or rather the lack of action, is sufficient, isn't it? We haven't been recognized, have we?

L. E. SAYRE: No, and what excuse is there for that?

DEAN WULLLING: I would like to know myself. In matters relating to the Government we all have to be very careful what we say and do. You can all draw your own conclusions. I cannot quote any particular person, because no person has made that statement to me. I have had correspondence with heads of departments in Washington, and some of it has been very satisfactory indeed; in the beginning, it was not satisfactory at all. Now, it has been brought about that the War Department has established a military status for students of pharmacy, although they must be members of a collegiate institute.

L. E. SAYRE: Can you answer the question why it is there is a difference between the pharmacists in the Navy and the pharmacists in the Army?

F. J. WULLING: That is one of the riddles that I am not able to solve. It is considered that the marine is above the soldier. That is the reason given me a few years ago. Why, I don't know. There are a lot of things we know about but we should not talk about. I am perfectly willing to defend the Washington officials in large measures. I really haven't anything further to say except that I hope something constructive will come out of this discussion. If you gentlemen can agree with me in only part of what I said, possibly you can crystallize that into some action. It won't do simply to keep on talking; we have got to do something. We are all dressed up with nowhere to go; we have got to fix a time and get there; fix a time for the realization of some of these things and wake up to them.

L. E. SAYRE: Shall we go to the public rather than to Washington?

F. J. WULLING: I wouldn't want to embarrass the Government at this time; I have a grievance against the Government because they have not enacted a bill creating a pharmaceutical corps, but it doesn't mar my loyalty to my country. I wouldn't want to embarrass the Government at this time; if it wouldn't embarrass the Government I would be perfectly willing to take the case to the people. I think it might be a good plan to ask the Government if they would resent our going to the public.

WILLIAM C. ANDERSON: I do not feel that in going to the public on this question we would be embarrassing the Government, but rather helping the Government. I believe the Government ought to know; I believe the people in authority in Washington ought to know what the conditions are in our Army.

As to the pharmacists being denied positions in the Army because of lack of intelligence, I have very little regard for that assertion. I am sure that is not the reason why the pharmacists have not been given a position in the Army. One of the first reasons is that we have in Washington, and have had for years, an influence always working against pharmacists. That influence must be overcome before pharmacy can secure its rightful place.

I had the fortune to come to this meeting from Indianapolis with a soldier whom I heard speak at the Chamber of Commerce luncheon in Indianapolis the day before. I was impressed with his speech; he was a captain in the medical department of the Belgian army. I introduced myself and one of the questions we took up was this matter of pharmacists in the army. He was really horrified when I told him what the position was. He said: "Do you mean to tell me the American army has no pharmacists?" I said, "That is the actual fact." He said, "Who handles the medicines?" I said, "Why, men who have been horseshoers, bookkeepers and chauffeurs, etc., have positions higher than the pharmacists. We have pharmacists in the trenches and in the ranks, and we have in that same regiment men who formerly had been horseshoers and chauffeurs, who are handling the medicine." He said, "I can't understand it:" He said, "In our armies, the pharmacists occupy a very important position, in Belgium, in France, and in England; we could not get along without them, and I can't see how the American army can get along without them; every ambulance has at least one pharmacist, and some of them two. If we want medicine we write for it, the same as if we were at home; if we wanted a five percent solution of phenol, we would write for it and the pharmacist compounds it. The pharmacist keeps the records." He stated that he was on his way back to France; that he was going to Washington and get his passports and he was to have an interview with General Gorgas and that he would speak of this matter very positively to General Gorgas, expressing his opinion with reference to it.

There were three gentlemen sitting near us and overheard the conversation, and they became interested; they began asking questions and, the situation being explained to them, one of them having a son and the other a brother and another a relative over in France, they said, "Why don't you bring this to us? Why don't we, who have our boys over in France, know of this condition and know that our boys are not getting the medical treatment they should have?"

One other reason why we have been denied this position, in my opinion, is that the distribution of medicine in the Army does not require the services of a pharmacist. Such distribution is wrong. It is not the treatment the boy would get at home. Physicians do not depend upon pills and tablets alone. The Medical Department of the Army seems to believe that the pills and tablets can be handed by the chauffeur to the patient as well as by the graduated pharmacists. Such a distribution is a relict of old-time. This Belgian officer expressed himself in that way when I told him they used pills and tablets; he said, "That is old-time; we don't treat that way today."

H. M. WHELPLEY: I want to say a few words, merely to give you the point of view of the Army, very briefly. I recently had a long talk on this subject with an army officer of extended experience in the army. From that conversation, I gathered two points that must be made before we get pharmaceutical service. First of all, we must convince the Army that pharmacists are needed. He claimed that they are not; next, we must show them that pharmacists are sufficiently educated to be deserving of a commission. He pointed out to his satisfaction that at the present time they are not.

These are the two points that were the burden of his talk of fully an hour. First of all, that they are getting along all right, and, second, that pharmacists should not complain about their non-recognition because they are not sufficiently educated to be deserving of commissions.

HENRY KRAEMER: When Dr. Anderson was talking to the captain of the Belgian Army, he was discussing one type of pharmacists and the captain was thinking of another. The pharmacists of France and the apothecary of Germany and the chemist of England are professional pharmacists and these are the men who are allied with the medical department. I heartily approve of Doctor Anderson's suggestion. But really, let us just think of the seriousness of the situa-

tion. I don't think we should be too hard on the American Medical Association. It was with Eberle I spent some time a year ago on this matter with Doctor Simmons. When I said to him that we had a sufficient number of professional pharmacists in this country, and that we were urging his support because these men could command the attention and interest of our boys at the front, the American Medical Association was willing to pick up this movement, but we have not, pardon me, I think, done all we could.

H. L. MEREDITH: I would like to ask Professor Kraemer whether a pharmacist he has turned out and on whose certificate he has put his name has less intelligence than the ordinary blacksmith or bartender.

WILLIS G. GREGORY: I wish to take this opportunity to express my appreciation of the value of these joint meetings of college men and board men. Perhaps I am somewhat better able to appreciate their value, because of the fact that I am a member of a State Board of Pharmacy and I am also a teacher in a college of pharmacy.

Now, we are enjoying our annual pastime of "passing the buck." Every year we come together and the Conference of Faculties with a great deal of seriousness and unlimited dignity unanimously resolves that it is time the Boards of Pharmacy should do something, and the Boards of Pharmacy with equal seriousness and surpassing dignity decide that it is time the Colleges of Pharmacy should do something. After we have passed these resolutions and transmitted them to each other, we adjourn, and next year we do the same thing over again.

Now, I have a notion, from having listened to this annual performance for a number of years, that conditions would be materially improved and progress would be made if we could be a little franker with each other and define some of our statements. We have, on the one hand, a group of college men that are constantly preaching higher standards and bemoaning and bewailing the fact that we haven't the proper standard, whereas the fact is we have standards in the American Conference of Pharmaceutical Faculties that are reasonably satisfactory at the present time to a large majority of the Conference. That is the reason they do not put up any higher ones because they are satisfied with things as they are, for the time being. I doubt not that the same condition exists in the Boards of Pharmacy. You have standards with which you are satisfied for the time being; if you were not satisfied you would create new ones. Why don't we get together on these standards and see how far apart we are? I don't think we are so very far apart. Our friend over here said the Boards of Pharmacy couldn't do anything until the colleges classified themselves or standardized themselves, and if they didn't do it, the boards would do it for us. Thank you, gentlemen. We are obliged to you for your good intentions, but so far as I understand the situation, the colleges of pharmacy have standardized themselves and are maintaining at the present time a standard which is reasonably satisfactory to the American Conference of Pharmaceutical Faculties, or else we would change it. Perhaps I don't know what the board men are talking about when they talk about standardizing the colleges of pharmacy. I presume I do not, and I want you to tell me what you mean, after I get through.

As I understand it, we have standardized colleges of pharmacy and that standard is satisfactory to us; if it is not satisfactory to the boards, I wish they would tell us wherein it is unsatisfactory; we would like to study that problem and we want all the light on it we can get. We are trying to get forward, but we can't go faster unless we are educated, and it is up to you gentlemen to post us.

In the first place, as I understand it, the Conference of Pharmaceutical Faculties has established this standard: First, that in order to matriculate a student, that student must be 17 years of age. That is a beginning standard. Second, that that student must have had two years of high school. That is another step in this standard. Next, that that student—perhaps I should have said this one first—must be of good moral character; we have to certify to that in our school. Fourth, this student must attend at least two years' instruction in this college of pharmacy. Fifth, that these years must include at least twenty-five weeks of instruction. That is the minimum; many give thirty or thirty-five and possibly thirty-eight in some cases. But there is the minimum per year, and each year must include a minimum of six hundred hours.

You know, this up and down business, this attitude in colleges of pharmacy interests me. I heard during the meetings of our Conference some talk about the "upper colleges" and the "lower colleges" and I wondered what it was that determined the attitude. As near as I can make it out it is in inverse proportion to the number of their students. If they have a few stu-

dents they are higher colleges of pharmacy and if they have a whole lot of students, they are a lower school of pharmacy. I am not sure that that definition is correct, but that is the impression I have gathered from listening to the discussion in our Conference.

We must have this two-year minimum amount of instruction and there must be a vacation period between them so the student will have a chance to digest what he gets one year and not be affected by mental dyspepsia when he gets ready for his second course. I suppose I have forgotten part of our standards because I didn't think to write them down.

If that is not the standard that the Boards think about and talk about and want, I wish they would tell us what standard they do want. I think that is quite a respectable standard, when you consider that only a few years ago we didn't have any at all.

I think the benefit to be derived from meetings of this kind is in being frank with one another. I think the colleges should tell the boards what they believe and want, and I think the boards should be equally frank in telling the colleges what they want. We are all trying to accomplish the same end and all of us want to serve the community not only in war times but in times of peace. Let us all boost, and we can do it.

The report of Chairman E. N. Gathercoal of the Section on Bacteriology and Immunology was read by title and passed for publication. It follows:

REPORT OF THE SECTION ON BACTERIOLOGY AND IMMUNOLOGY.

The Section on Bacteriology and Immunology of the Committee on Questions and Answers was organized in the fall of 1917 by the election of a chairman by ballot. The chairman and members have exchanged four series of letters in connection with the work of the committee.

The Section begs to submit its report under four headings, as follows:

First: Bacteriology, or better, perhaps, microbiology, is an essential in pharmaceutical education and should be a required part of the curriculum of pharmaceutical colleges, at least in the three-year and four-year courses.

Second: Adequate facilities for laboratory instruction should be provided and adequate time allotted for the proper teaching of the subject. From six to ten percent of the total curriculum hours should be assigned to bacteriology.

Third: Bacteriology as taught in colleges of pharmacy should not closely follow the subject as now taught in colleges of medicine. This science in pharmaceutical courses should embrace not only a study of pathogenic bacteria and their activities but also special work in sterilization, valuation of disinfectants, preparation of culture media and stains, diagnostic tests, sanitation work and a thorough knowledge of sera and vaccines as well as studies in Immunology, Zymology, Parasitology, etc.

Fourth: A summary of the information gathered by the members of the committee regarding the amount of time devoted to bacteriology in pharmaceutical courses and a list of questions indicating the scope of the work in colleges of pharmacy is also submitted.

COMMENT.

There has arisen within a few years a tendency to introduce "fads" among the subjects taught in pharmaceutical schools just as such a tendency has spread in our public schools and all other educational institutions. Ofttimes the fad becomes an established part of the curriculum and frequently develops into a very valuable part. Bacteriology in a pharmaceutical course is still frequently regarded as a fad and in the opinion of the conservatives its introduction into pharmaceutical curricula should be tabooed.

Bacteriology, however, has arrived at a well-established position in all educational courses having to do with medicine, sanitation and public health. The pharmacist is especially concerned in acquiring a knowledge of this science. Without question, the study of bacteriology should be included in what we now term the longer pharmaceutical courses, and these so-called longer courses should very soon become the predominant ones in pharmaceutical education. The one question that confronts us then is this: Shall the subject of bacteriology and immunology be included in the two-year or shorter pharmacy course and how much time shall be accorded to it?

Dr. Albert Schneider, of the California College of Pharmacy, says that the essential preparatory studies, namely, Physics, Biology and Human Physiology, should be presented in the first year of the two-year course and a lecture and recitation course of not less than 30 hours' class room work and six to ten laboratory periods should be given in the second year.

Dr. H. H. Waite, of the University of Nebraska College of Pharmacy, states that not less than 128 hours should be allotted to Bacteriology in the second year of the two-year course.

Dr. Francis Wenniger, of the University of Notre Dame, believes that at least 90 hours should be given to the teaching of Bacteriology in the shorter pharmacy courses and that the subject should not be omitted from any pharmaceutical course leading to a degree.

It is the general opinion of the committee members that the teaching of bacteriology by means of lectures and recitations only, without laboratory exercises, is not satisfactory, but some of the members, notably Dr. Gayfill Ellison, of the University of Oklahoma School of Pharmacy, hold that General Bacteriology should be presented to students of pharmacy even if laboratory work cannot be given.

As to the nature of the work presented in the bacteriological course in pharmacy, the Committee is practically unanimous on the point that such work should be founded on general bacteriology and that the scope of the work should be broad; much more so perhaps than the usual medical course in bacteriology.

The following is based on a résumé of the replies of the committee members regarding an ideal course in bacteriology. Two-year Pharmaceutical Course, one-half semester (eight weeks) of second year: Lectures and Recitations, 24 hours—General Bacteriology, Immunology and Serology, Pathogenic Bacteria, Hygiene and Sanitation. Laboratory, 48 hours—Sterilization and Disinfection Methods, Preparation and Preservation of Culture Media, Isolation of pure Cultures, Microscopic Study of Bacteria, Yeasts and Molds.

Three-year Pharmaceutical Course, one semester (sixteen weeks) of third year: Lectures and Recitations, 48 hours—General Bacteriology (more amplified than in the shorter course). Immunology and Serology, including illustrated lectures on the production of antitoxins and vaccines, Bacteria in Disease, Bacteria in the Arts—food preservation, butter and cheese production, soil bacteria, sewage disposal, water purification, etc. Laboratory, 96 hours—Sterilization and Disinfection Methods, Preparation and Preservation of Culture Media, Isolation of Pure Cultures, Cultivation and Study of Pathogenic Bacteria, Milk and Water Counts, Isolation of Sewage Bacteria, Valuation of Disinfectants, Preparation of Sterile Ampuls.

Four-year Pharmaceutical Course (after Dr. Schneider): First Year—Preparatory—The essential preparatory studies, Human Physiology, Physics and General Biology. Second Year—General Bacteriology—Lectures and Recitations, 30 hours; Study Preparation, 60 hours. Third Year—Laboratory Bacteriology—Laboratory, 120 hours. In addition to the usual laboratory course in general bacteriology, careful training in the exact technique of the preparation of the standard culture media and more important stains should be included. Fourth Year—Special Training.

At the University of Illinois School of Pharmacy we aim to teach the students especially all forms of sterilization and disinfection, apparatus being provided in the laboratory for such work. Likewise, the preparation of culture media receives much attention and every student is required to clean and sterilize all the glassware he uses and to prepare and preserve all the culture media he needs. Each student is required to isolate and, if possible, to identify and name at least one bacterial species. Such materials as hay, meat, feces, milk, water, sewage, air, pus, etc., are assigned for this purpose. Much attention is given also to the bacterial count of milk, water and food-stuffs and to the isolation of sewage bacteria. The valuation of disinfectants receives attention as also the sterilization of pharmaceutical solutions and the preparation of sterile ampuls. The students do not spend so much time on the pathogenic bacteria as do medical students, though they do make cultures and mounts of about 15 pathogenic bacteria. We have never done anything with animal inoculation, though in a complete course that certainly should be included. The recitations are based on assigned lessons in the text-book and thus the history and theory of the science are brought out. Especial attention is given to immunology and to the commercial preparation of antitoxins and vaccines.

Professor Jordan presented the report of the Section on Physics and Chemistry.

REPORT OF THE SECTION ON PHYSICS AND CHEMISTRY.

The work of this Section was organized as follows: 1st. Each member of the Committee was requested to prepare a set of 20 questions that he considered practical for State Board Examinations and that would also indicate, in a measure, the scope of the work that the members

were doing. 2nd. They were asked to submit any subjects that they considered of sufficient importance to merit discussion. 3rd. Complete sets of questions were later distributed and the members asked to criticize them. 4th. Subjects for discussion were submitted and opinions called for.

In general, the members of the Sub-Committee responded well to the requests for opinions, discussions, and questions, the only disappointing feature being that very few offered any criticisms of questions submitted. It is also to be regretted that a number of colleges of pharmacy had no representative on the Sub-Committee. The membership of the Committee was secured by Dr. Henry Kraemer and, as I understand, consisted of all those teachers of chemistry and physics in Conference colleges who volunteered to assist in the work.

The following subjects were discussed and the conclusions drawn by consensus of opinion:

Teaching of Physics.—The opinion was universal that Physics should be required of graduates in pharmacy. A majority of the Sub-committee considered that a year of High School Physics should be required for entrance to colleges of pharmacy, and this would satisfy the need for instruction in this branch. All agreed that if Physics was not required for entrance, a lecture and laboratory course should be given. If the curriculum does not permit this, as a last resort, physical facts should be taught in the Chemistry course, although this is not recommended as sufficient for the pharmacy graduate.

The following resolutions were presented and voted upon:

1st. *Resolved,* That Physics should be dropped from the Pharmacy curriculum, and that all necessary physical facts be taught in the Chemistry course. 7 No, 4 Yes.

2nd. *Resolved,* That the Pharmacy curriculum should require at least one-half year of Physics consisting of both lecture and laboratory work. 6 No, 5 Yes.

3d. *Resolved,* That the Pharmacy curriculum should require at least one year of Physics consisting of both lecture and laboratory work. 6 No, 5 Yes.

Many of the answers to these resolutions were modified by statements that are too lengthy for record here.

As a result of this study the Committee would recommend *That if Physics be not required for entrance to the College of Pharmacy, at least one-half year of Physics, consisting of both lecture and laboratory work, be required of all graduates in pharmacy.*

Another question that the Committee considered was the amount of time that should be devoted to theoretical chemistry in the General Chemistry Course. The Committee as a whole agreed that not enough theoretical discussion was given. The following resolution was presented: *Resolved,* That not less than one-half of the lecture time in General Chemistry should be devoted to theoretical discussion. Yes 8, left to instructor 3.

Your Committee recommends *That the National Pharmaceutical Syllabus require that more time be devoted to theoretical chemistry and that not less than one-half of the lecture time in General Chemistry be given to it.*

The subject of useless synonyms was discussed, and all agreed that too much time and effort are spent in memorizing synonyms, and that the number should be reduced to the minimum.

This resolution was submitted for consideration: *Resolved, That the American Conference of Pharmaceutical Faculties should recommend to the National Association of Boards of Pharmacy, and to the drug and chemical manufacturers and importers, that only official synonyms be used in examination questions and on containers of drugs and chemicals.*

This resolution was heartily endorsed and therefore your Committee recommends it for your consideration.

When the lists of questions were received, it was found that many of the teachers were asking for information that is usually considered unnecessary to remember, or can easily be found in reference books when needed, and has no value in the thorough understanding of the subject under discussion. In order to bring this to the attention of the members of the Committee, the following questions were submitted and the following answers received:

1st. Should students be expected to remember atomic weights? A hearty *NO!* in response, except a few that they will naturally remember by repetition.

2nd. Should students be expected to remember assay processes of the U. S. P.? Response—*NO!*

3rd. Should dose and therapeutic action of chemicals be taught in the Chemistry Courses? Response—"*NO*" in most cases. Some thought it should be left to the instructor's judgment.

4th. Is it important that students remember the number of assays of any particular type process? Response—"NO."

These questions and responses indicate that the teachers of physics and chemistry do not consider that it is necessary or valuable for students to remember data that, although necessary for the solution of problems, is of no value in understanding the processes involved, and can easily be obtained when wanted from any good reference book. Unfortunately, State Board Examiners do not always look at it in this light, but often place great weight on the ability to remember data. The Chairman of the Sub-Committee is of the opinion that this Conference should make a recommendation to the National Association of Boards of Pharmacy regarding this question, but the Sub-Committee has not as yet had time to consider the question in that connection, and is therefore not ready to offer a recommendation.

Many other subjects were discussed by the Sub-Committee, of which the following are representative:

1. Is opposition to chemical and physiological assaying by the average retail pharmacist who claims he never uses it and that it is for the most part impracticable, and belongs only to experts, justifiable? If so, why spend time teaching these things?

2. Is it really a "waste" of time for pharmaceutical students to take up courses outside the regular fixed curriculum, in order to be more polished and have a better understanding of others, and other sciences and arts, besides that of the circle of pharmacy?

3. Would not a year or two in Physics under good physicists pave the way for a better foundation to understand the physical phenomena met with in pharmacy?

4. Would not a year or two in mathematics, as higher algebra, trigonometry and calculus, help the pharmacy students in dealing with all mathematical calculations involved in the science of pharmacy?

5. Would not more time devoted to organic chemistry, physical chemistry, colloidal chemistry, and chemistry of synthetic drugs, aid more in establishing the pharmacist in his rightful place as an expert in his science and art of preparing, preserving, compounding and dispensing medicines?

6. Should the fundamentals of chemistry and physics be taught differently for pharmacy students?

7. Should a course in Food Analysis be included in the pharmacy curriculum, and how much time should be devoted to it?

8. Should a course in Physical Chemistry be included in the pharmacy curriculum? If so, should it be elective or required?

9. To what extent should Urinalysis and Toxicology be taught?

10. Should we not attempt to bring into the Course in Pharmacy laboratory work in chemistry that will tend to develop a desire on the part of the students for research problems?

11. I believe that the student derives the greatest amount of knowledge of his general chemistry by a great amount of time spent in qualitative analysis. Therefore, should not the student be given unknown mixtures of several bases and acids and allowed to work out his own salvation, giving him only sufficient instruction that he may not waste time or become discouraged?

Your Sub-Committee can only report progress on these subjects as time prevented the full discussion of them.

Miss Zada Cooper presented a report of the Committee to Investigate Short Term, Correspondence, Summer, and other Similar Courses in Pharmacy. This was published in the October, 1918, number of the JOURNAL OF THE A. PH. A., pp. 894–898.

WILLIAM MANSFIELD: Miss Cooper has shown us that there are a number of States in which there are schools which have no right to exist, and they are primarily in existence because the boards of pharmacy and the legislatures of those States have no pharmaceutical standards.

JACOB DINER: The paper of Miss Cooper deserves a great deal of discussion. On the one hand, we are talking about a four-year high school and a four-year pharmacy course, and, on the other hand, we have the six-weeks "fly-by-night" correspondence course. What are we going to do about it? Discussions are not going to solve this problem at all. It is up to the members of the boards of these States, where they have no prerequisite requirements, to insist that prerequisite requirements be introduced. In New York there was an avalanche of opposition

aroused when prerequisite was mentioned; today we have two years' high school and two years' college and we expect to have more soon.

HENRY P. HYNSON: I move, Mr. President, that this paper be referred to the two secretaries of the associations here assembled with the request and the authority that they have a large number of copies of this paper published. In my opinion the subject is presented in such an attractive way that it will be the most influential tract that could be circulated in the several States. I think the States could reimburse the faculties for this expense.

H. H. RUSBY: In seconding that motion, Mr. Chairman, I want to endorse what you yourself said a moment ago. I think it is not wholly up to the boards of pharmacy; I think if the boards of pharmacy do not have assistance from the schools of pharmacy in securing the necessary legislation, they are going to have a very hard time. I feel that the schools which have been insisting and clamoring so loudly for hasty work in elevating the standards of schools have been grossly negligent of their duties. Most of them have done nothing whatever, and some of them have said they did not care a thing about whether they got prerequisite laws in their States or not. Universities have a great deal of influence in their States; they are acquainted with legislative matters; they have attorneys and they could do an immense amount of work in securing prerequisite legislation. Why don't they do it? I, this morning, was going to offer in the Conference of Faculties a resolution directing the Executive Committee to ascertain what steps, if any, had been taken by the universities represented in the Conference looking to prerequisite legislation, and what success had attended their efforts, and to report at the next meeting. The secretary thought it might be misconstrued and be regarded as something aggressive and unfriendly, so I withheld it. It was not so intended.

While the boards of pharmacy must do their part, it is up to the schools of pharmacy to assist in securing this legislation, and if they don't do it, it is not likely to be secured at an early date.

R. A. LYMAN: I want to say a word with reference to the matter Dr. Rusby has just brought out. When we were in San Francisco, the Boards of Pharmacy passed a resolution recommending that we take steps to go to a four-year high school requirement in the year 1920. After that I felt perfectly at home with the Boards of Pharmacy, and I feel safer when I get up to discuss a problem which is concerned with the raising requirements in pharmacy when I am in the presence of board members than when I am in the Conference of Pharmaceutical Faculties. For three years the State universities have tried their very best to bring these requirements up to four-year high school requirements. They have done it in almost every State in the middle, northern, and western States, and have rejected the students who did not have such preliminary education. We have tried to get the Conference schools to come to the four-year high school requirements. Last year, in my presidential address, I put it up to the Conference. It had been put up to them by two presidents before me. It was put up by one president and reformed by the second one; in 1917 they begged these schools to put the adoption off until 1918. In 1918 they asked to put it off a little longer; we needed five years, so we put it to 1923, with an understanding among us all that in 1923 there would be no backsliding.

In the universities of my particular section, we are taking up the matter of prerequisite law; there is a committee, of which I am a member at the present time, working upon a prerequisite law for the State of Nebraska. I don't know whether it is a good thing for me to stand here and say so, or not; sometimes it is a good thing not to speak of activities, because opposition may be developed. I have always maintained, since I have been in the Conference, that it was the duty of the colleges to take the advanced standing. The colleges existed in America many, many years before the state boards were thought of, and the colleges have molded public opinion and made the organization of state boards possible. I have never been willing to say that I thought that the advancement should come from the boards, but I do say that the advancement has got to come from coöperation between the Conference and the Boards. I can assure you that in all the States where there are universities clamoring for a higher requirement, their faculties are not asleep in the legislative department of their States, and the time is not far distant when in every State in the Union, where there is a progressive university requiring the highest of ideals, you will find a prerequisite law.

W. F. RUDD: We have a prerequisite law in Virginia which was passed in February of this last year. I am sure that it is due entirely to the fact that the president of our board was

present in Indianapolis last year and got some fire in him which he carried down to Richmond and he sat there on his job. He lives three hundred miles away, but he went down to Richmond and stayed there all the time that was necessary during the session of the legislature, and he put over the prerequisite legislation in February of that year with not a negative vote in the Senate, and a large majority in the House. Now, if we, as Faculty people, and as Board people, can see this thing aright, we are certainly all going in the same direction. If we can carry home with us something of the spirit that Mr. John E. Jackson got from the meeting last year, then we will have prerequisite legislation coming up over and over again.

CHARLES FALKENHAINER: There has been something said here about universities not doing anything along the line of securing prerequisite legislation. To aid our efforts in that work, Dr. E. L. Newcomb came down to an Iowa legislative meeting, a year ago last winter, and addressed our association. His presentation virtually resulted in our getting a prerequisite law. There was contest, but the members were aroused and exerted their efforts until the fight was won. It requires persistent coöperative work.

H. M. WHELPLEY: I desire to amend the motion before the house to refer this matter to the secretaries of the two associations, by substituting that it be referred to the Editor of the Journal of the American Pharmaceutical Association with the request that the report by Miss Cooper be printed and that a supply of reprints be made of it for distribution to interested persons.

Prof. H. P. Hynson accepted the amendment, which was seconded by Dr. H. H. Rusby, put to a vote, and carried.

Professor C. A. Dye read the following report by title, which was accepted for publication:

REPORT OF THE COMMITTEE OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES ON RELATIONS OF THE COLLEGES WITH THE BOARDS.

Those of us who were so fortunate as to be present at the joint session of the Colleges and the Boards last year, and heard the discussion which took place, will no doubt recall that a great many splendid suggestions were made relating to the establishment of closer relations between the two bodies. The ground was most thoroughly covered and there is little left, that is new, for your Committee to discuss or recommend. At most, therefore, we can but hope to emphasize more strongly some of the features suggested last year and perhaps present a few new questions for discussion.

Throughout the discussion there was uniformity of expression of the great desirability of the Schools and the Boards coming closer together and the wish for a closer coöperation in their work. We believe that with an earnest fostering of this spirit the grade and quality of the licentiates will be materially improved. This is certainly a condition greatly to be desired, if not actually demanded, at the present time, and one which we are sure all are trusting will be speedily brought about.

If, however, this view of coöperative work is to result in greatest influence and permanency there must be developed along with it a greater spirit of recognition of the value of the friendly criticism that may be offered by members of both organizations. Little can be accomplished if both sides come so far and then entrench themselves behind what they are pleased to call their line of personal privilege. Both are surely falling short of their duty to the students and the Commonwealth represented if personal ambitions are permitted to enter into the question of how far the best interests of pharmacy will coöperate. Personal ambition and personal privilege are both well worth while, in their proper places, and should be jealously guarded, but when they are permitted to influence every move and lead into political intrigues we are forgetting our duty as teachers and officers of the State we represent.

We believe that, as a rule, the Faculties are more willing to coöperate than are the Boards. The latter, if we may judge from various reports, are more or less inclined to stand on what they are pleased to call their prerogatives as State officials and resent any suggestions from impractical college professors. There was a time when the college professor might be looked upon as an impractical visionary, as devoid of real modern up-to-date, practical ideas as is possible to imagine, but that day has passed. That this is true we feel is more than evidenced by the way the Government is calling them into service. On the other hand, we unfortunately find a number of teachers who are unwilling to listen to suggestions and friendly criticisms from the Boards; they seem

to feel that they are omniscient and therefore can make no mistakes. That they should be so short-sighted and stand in the path of their own progress and the best interests of their students seems impossible.

Indeed we should think they would welcome such friendly criticism, for the members of the Boards are in position to judge better of the work we are doing as teachers than any other class of men.

It is to be regretted that we find such members in either organization for they surely stand in the way of any genuine and lasting progress. On the other hand, it is to enable these two groups to see their mistakes and profit by them that these joint conferences are held. That they are productive of good results is evidenced by the increasing number of Boards and schools that are seeking to identify themselves with the two organizations. This fact in itself is not enough; there must be something more behind the act of joining than the simple badge of membership. There should be an active participation, by representatives of both organizations, in not only their own meetings, but also the joint conferences. Colleges and boards that fail to maintain an active membership by representations should not be permitted to enjoy the rights and privileges, as well as the dignity and standing, that the membership carries with it.

As one member of the Committee states, "I should be glad to see more intimate connections between college faculties and the boards of pharmacy than exist on paper and by the annual meeting of representatives of both groups." In other words, the conference idea should not stop with our annual meetings, but should be carried back to our various states, there to be renewed. In this connection the member of the committee previously quoted says: "I would recommend that at meetings of the boards, representatives of the college faculties be occasionally invited to attend." The Chairman of your Committee believes even more enthusiastically in these joint conferences of the boards and the schools, and the benefits to be derived therefrom, and would therefore make the recommendation stronger, namely, that the boards should request that representatives from the various schools should meet with them at least once a year for a joint conference and discussion of the various problems of education and registration. Some may wonder what problems we might have either in common or individually wherein we could be of any service to each other in solving or, for that matter, any reason why we should wish to get any closer together. To suggest one or more such problems worthy of discussion, we might mention the question as to what extent we are using the *Syllabus* as a basis for our teaching and the Board examinations. It is of course to be assumed that we have some common basis, but even though we may, this must be used with care. With the *Syllabus* care and judgment must be exercised, even where it is used in a coöperative way, for if not, we will find some of the schools attempting to follow the outlines of the Syllabus to the letter and trying to cover all the details of a subject in a limited time. As a result their work is likely to be superficial and the students lack sufficient training in the fundamentals. On the other hand, as teachers, we may attempt to cover what we consider the fundamentals, and the Boards in their examinations assume that the subject has been completely covered. In either event the result is generally the same, failure for the student and embarrassment for the teacher. Such a condition could not arise if there were a closer relationship and coöperative spirit between the boards and colleges of the various states. At present the *Syllabus* is the only authoritative guide, which we have, that may be used by both the teachers and the boards as a definite basis for our work. It is a creation of representatives from both organizations constituting this joint conference, yet we wonder to what extent and by how many schools and boards it is followed. Surely we must have some basis and common ground for, and limitations to our work as teachers and examiners, if our work is to be efficient and the examinations are to be fair and consistent.

(To be concluded in next number.)

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.
Committee on Publication: J. W. ENGLAND, *Chairman;* G. M. BERINGER, CASWELL A MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio.*

DENOMINATIONS AND ABBREVIATIONS OF THE METRIC SYSTEM IN PHARMACY.

An effort should be made to bring about uniformity in the writing of metric denominations of weights and measures. So far as pharmacy is concerned there is no need for other denominations than milligramme, gramme and kilo for expressing weights, and mil and liter for cubic measures. The ending "me" should be dropped and the simplified spelling of "gram" adopted. The abbreviation "Cc." conforms better with "Mm.," however, the Pharmacopoeia uses the term "mil," so it may be advisable to follow the more general custom of writing "cc." The lack of uniform practice in writing metric terms is a hindrance to a more general adoption of the system. The least number of denominations possible is desirable. The subject is deserving of consideration by the next Pharmacopoeial Convention.

PHILADELPHIA DRUG EXCHANGE URGES THE DELETION OF UNNECESSARY NARCOTIC FORMULAS FROM PHARMACEUTICAL PRICE LISTS.

At the meeting of the Board of Directors of the Philadelphia Drug Exchange held on May 14, 1919, a motion was passed directing the Secretary to communicate with the American Drug Manufacturers' Association and other drug manufacturing bodies, calling attention to the apparently needless multiplication in the price lists of manufacturing pharmacists of narcotic drugs of many unnecessary strengths urging that the number be minimized to the fewest possible units, so that the burden of making out the Federal and State Narcotic Reports be reduced to the lowest possible limit.

In a letter issued by Secretary J. W. England it is pointed out that, for example, in the price-list of a prominent manufacturer there are of hypodermic tablets of morphine, plain and combined, 37 strengths; of heroine, 5 strengths; of diacetylmorphine, 4 strengths; of codeine, 6 strengths; of cocaine, 8 strengths. There are 72 items in the list of hypodermic tablets subject to the Harrison law. In the same list, under tablet triturates there are 99 items; under compressed tablets, 43 items; under chocolate-coated tablets, 54 items; under dispensary tablets, 8 items; under pills, 49 items; a total in all of 385 items, and this does not include elixirs and other forms of galenicals, nor the items of the pricelists of other manufacturers not mentioned in the list referred to. Hence, it is apparent that druggists are compelled to stock and report upon hundreds of narcotic preparations, many of which could be eliminated from the list and the burden of the wholesaler and retailer lightened.

The coöperation of manufacturers and dealers is requested for standardizing the lists of the preparations referred to by minimizing the number of items of narcotic products, to the end that the details of keeping narcotic records may be simplified and time and work saved.

The letter concludes by stating that there are trade demands which necessitate the listing of many narcotic products but that there is a marked tendency in the medical profession towards the much-lessened use of narcotic drugs in the treatment of disease, and that the medical profession would not seriously object to the excision of many narcotic formulas from the lists, and they would not be denied the use of such narcotic drugs, as they could readily have them compounded extemporaneously.

RESEARCH AND REFERENCE WORK OF WISCONSIN PHARMACEUTICAL EXPERIMENT STATION.

Circulars up to No. 5 have been issued by the Wisconsin Pharmaceutical Experiment Station. Circular No. 3 deals with Medicinal Plants and Designs. The work of Miss Bernice Oehler shows the possibilities for beauty and attractiveness of designs from medicinal plants and suitable for decoration of the drug

PETROXOLIN (UM)

History: This is the Latinized form of the name suggested by M. I. Wilbert, and adopted by the *N. F.* IV, as a more convenient designation for the longer title *Petrolatum Saponatum* of the N. F. III. Whereas the earlier edition (1906) contained but the two basal preparations (See *Petrolatum saponatum liquidum* and *P. S. spissum*), the last edition (1916) contains as many as eighteen specific preparations in addition to the *Petroxolinum liquidum* and *P. spissum.*

Properties: *Petroxolinum liquidum* is a yellowish-brown liquid, miscible with ether, chloroform, petroleum, benzin or acetone and produces an emulsion-like mixture when added to twice its weight of water.

Preparations:

Petroxolinum Betanapholis 10 per cent
Petroxolinum Cadini 25 per cent
Petroxolinum Chloroformi camphoratum
Petroxolinum Creosoti 20 per cent
Petroxolinum Eucalyptolis 20 per cent
Petroxolinum Guaiacolis 20 per cent
Petroxolinum Hydrargyri 30 per cent
Petroxolinum Iodi 10 per cent
Petroxolinum Iodi dilutum 5 per cent
Petroxolinum Iodoformi 3 per cent
Petroxolinum liquidum
Petroxolinum Mentholis 17 per cent
Petroxolinum Methyl salicylatis 20 per cent
Petroxolinum Phenolis 5 per cent
Petroxolinum Phenolis camphoratum
Petroxolinum Picis 25 per cent
Petroxolinum spissum
Petroxolinum sulphuratum
Petroxolinum sulphuratum compositum
Petroxolinum terebinthinae laricis 20 per cent

Uses: Petroxolins used for external application are found to be readily absorbed by the skin. They may be painted or rubbed into the skin or applied with cotton, etc. *Petroxolinum spissum* may be used in place of *P. liquidum* when ointment-like preparations are wanted.

Parallel preparations: For further information concerning this type of preparations see:

Linogen; Linoliment; Linoval; Parogen; Penetrole; Petrogen; *Petrolatum saponatum;* Petroliment; Valseiol; Vaisol; Vasapon; Vascosan; Vaselon; Vaseloxyne; Vasenol; Vasogen; Vasol; Vasoliment; Vasopolent; Vasoval.

Literature: More detailed information may be found in the following journal articles arranged chronologically:

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1906. H. E. B., *Solid Petrox. Drug. Cir.*, 50, p. 646.
1909. Diehl, C. L., *Report of the Committee on the National Formulary. Proc. A. Ph. A.*, 57, p. 1081.
Wilbert, M. I., *Ibid.*, p. 1081.
Pleuge, H., N. F. *Comment. N. A. R. D. Notes*, 9, p. 472.
1911. Beringer, G. M., & G. M. Jr., *Petrox Preparations. Am. Jour. Pharm.*, 83, p. 213.
Raubenheimer, O., *Petrozolinum spissum. Am. Jour. Pharm.*, 83, p. 223.
McClurg, W. E., *Iodine Petrox. Merck's Rep.*, 20, p. 287.
1912. McElenie, F. D., *Proc. of N. Y. Branch. J. A. Ph. A., I*, p. 272.
Burge J., *Proc. of the Nashville Branch. J. A. Ph. A.*, I, p. 391.
1912. ——, *Proposed Formulas for the N. F. J. A. Ph. A.*, I, p. 176.
——, *Proc. of City of Wash. Branch. J. A. Ph. A.*, I, p. 394.
Newton, R. A., *Rep. of the New England Branch. J. A. Ph. A.*, I, p. 87
Saalbach, L., *Hints on Proposed N. F. Formulas. J. A. Ph. A.*, I, p. 321.
De Jonge, C., *Proc. of the N. Y. Branch. J. A. Ph. A.*, I, p. 517.
Thum, J. K., *A Note on the Proposed Formula for Petrox. Am. Jour. Pharm.*, 84, p. 119.
Roemer, J., *The N. F. in the Making. Drug. Cir.*, 56, p. 259.

General articles on the subject may be found in

1910. Wolf & Fleischer, *Nova Therapeutica*, p. 356.
——— *Gehe's Codex*, p. 270.
1908. Cobientz, *The Newer Remedies*, 4 ed., p. 98.
1916. *The National Formulary*, IV, p. 159.
Squire's Companion to the British Pharmacopoeia, 19 ed., p. 987

Wis. Pharm. Ex. Sta., H. A. L., Form 15; 8-18.

store. The plants thus treated by the artist are hyoscyamus, digitalis and stramonium. Circular No. 4 relates to Volatile Oil of *Monarda fistulosa* L., by Emerson R. Miller. Several pages of an encyclopaedic pharmaceutical dictionary that is now being edited on the card system are included; these are concerned with the life and work of Dr. J. O. Schlotterbeck and a page of references to Solution of Potassium Arsenite. Circular No. 5 was prepared by H. A. Langenhan and G. J. Noel and is complete and comprehensive with information on N. F. Petroxolins and Parallel Preparations. The thoroughness is evidenced by twenty-one cards of the dictionary to which reference has been made. Instead of going into detailed explanation of this card system, one of them has been reproduced in reduced form; the originals are 5 × 8 inches. (See top of this page.)

CLINICAL PHARMACOLOGY OF DIGITALIS.

The *Journal of the A. M. A.* abstracts a report by Wedd compiled from data on unselected cardiac and cardiorenal hospital patients to whom digitalis was given, including twenty-nine in whose cases electrocardiographic records were taken every twenty-four hours, or more frequently, during the period of administration of a standardized preparation of the drug. It was soon apparent that successive tinctures supplied to the hospital wards showed marked variation in their efficiency. Two biologically standardized tinctures of approximately theoretical strength were studied and it appeared that the inefficiency of one was due to failure of prompt absorption from the alimentary canal, as was indicated by the larger amount necessary to produce a change in the T wave, the earliest demonstrable digitalis effect. Daily doses averaging 10 Cc. were given and continued until alimentary disturbances or abnormalities in the cardiac mechanism appeared. In no case was there any ill effect attributable to digitalis and there were no evidences of the so-called cumulative action. The toxic dosage showed marked individual variation from 20 to 100 Cc. The earliest signs of toxicity were slight nausea and premature beats. It is believed to be a perfectly safe procedure and one which will promptly bring about the expected benefits of digitalis to begin with an initial dose of 5 Cc. of tincture and to continue with 8 or 10 Cc. daily until signs of toxicity appear or until clinical improvement warrants discontinuing the drug. In the series studied were cases with all possible valvular defects, all grades of decompensation, renal lesions of varying degrees of severity, systolic blood pressures ranging from 90 to 230 Mm. and almost all of the recognized types of myocardial involvement, including cases of intraven-

tricular block and complete dissociation, and there was not found any clinical entity which might be said to constitute a contra-indication to the use of digitalis.

PUBLIC SERVICE.

Every citizen owes a duty to the public. That duty is in direct proportion to the standing and influence of the individual citizen in the community. The duty of the mayor or member of the town commission is high in proportion to the duties charged against him. The duty of the professional man and merchant is high because of the wide influence of their words and acts.

The professional men of the community owe a peculiar duty to the community. They are the men who have been trained in broader things, as well as in a more intensive way. They are the men who look upon life from the vantage ground of educational advantages superior to those given the average man. They are looked to by the rest of the community to handle the extraordinary things of life, the things that are beyond the capabilities of the average man. Upon them rests a serious civic responsibility. The pharmacist must shoulder his share of this responsibility.

The pharmacist who fails to perform his duty toward the public is not performing his whole duty toward his profession. He must accept the responsibility for public service.

Now a community is rated among communities in regard to its prosperity. The community expert will tell you that the first thing to be done to determine "what is the matter with your community" is to find out if the people are paying their bills. If the community banks are struggling along with high interest rates, loans that are often renewed, and principal that frequently is lost, if your retail merchants and professional men are carrying the burden of a long line of extended credits, the community expert will tell you your community is living from hand to mouth, and is probably living in excess of its income. Living outside of income is just as bad for the community as it is for a business concern.

There is a remedy for this condition and the pharmacist with his own interests and his community's interests at heart can help apply it. It is the thrift movement which, as a result of the habit of saving acquired during the war period, is now sweeping the country.

It is axiomatic that the man who saves is the man who pays. If your community is thrifty it will pay promptly. If your community will pay promptly, interest rates and prices generally in the community will go down. The community will eliminate the high prices incident to bad accounts and bad collections. Incidentally the pharmacist will eliminate the high costs incident to these unnecessary accounts and collections.

The thrift movement offers every professional man an opportunity to do his duty by himself and his community. He can lend his public influence to the campaign for thrift. In every community the thrift movement has a Savings Director, appointed through the Federal Reserve Bank System, who is directing the local thrift campaign. He needs help. He deserves the coöperation of every pharmacist in his efforts to foster the thrift spirit, and to make War Savings Stamps available everywhere as a means of systematic saving.

PERSONALS.

Dr. J. H. Beal, an ex-president of the American Pharmaceutical Association, first editor of the JOURNAL A. PH. A., president of the National Drug Trade Conference, etc., is the first recipient of the Remington Honor Medal, awarded by the New York Branch of the American Pharmaceutical Association. The presentation is to be made during the New York Convention of the American Pharmaceutical Association, and for this reason further comment at this time is deferred.

Caswell A. Mayo, ex-president of the American Pharmaceutical Association, and for many years editor of the *American Druggist*, has accepted the management of the publicity department of William S. Merrell Chemical Company, of Cincinnati, Ohio. Mr. Mayo's activities in association circles are well and favorably known and also his achievements as a pharmaceutical editor. New York pharmacists regret Mr. Mayo's departure, while Cincinnati rejoices in this accession to her citizenship and number of her distinguished pharmacists. Charles W. Parsons, heretofore of the publicity department of E. R. Squibb & Sons, has succeeded Mr. Mayo as editor of the *American Druggist*.

F. B. Hays, editor of the *Druggists' Circular*, who was for a time in Manhattan Hospital, undergoing treatment of his eyes, has, we are glad to report, sufficiently recovered to permit resumption of his work.

William S. Glyn-Jones, Secretary of the British Pharmaceutical Society, has been knighted, hence is now Sir William. Michael Carteighe said of him in 1902, on his admission to the Bar, when a dinner was tendered to him, that he (Mr. Glyn-Jones) had received a training and undergone a discipline in the hard school of retail business in pharmacy, in organizing experience and activity for the promotion of pharmaceutical trade interests, and in the sphere of pharmaceutical politics, which served as the best of all preparations and endowments for any part he might be destined to play in the more spacious fields of legal practice or in public affairs.

The distinguished career has amply justified the speaker's judgment and foresight. American pharmacists join those of Great Britain in expressing their gratification at the well-deserved honor of knighthood which has been conferred upon Mr. Glyn-Jones in recognition of his distinguished parliamentary and public services.

SERVICE ROLL OF ILLINOIS PHARMACISTS.

At the suggestion of the Chicago Branch of the American Pharmaceutical Association, through the efforts of Superintendent Dodds, of the State Department of Registration and Education, and under the auspices of the Illinois Pharmaceutical Association, an effort is being made to prepare a complete list of all the pharmacists, assistant pharmacists and apprentices registered in Illinois who have served in the Army or Navy of the United States during the present war.

A total of completed cards to date is 511. About 150 other names are on the list for which the data is not yet completed. Some interesting totals are obtained from the 511 cards, as follows:

Registered pharmacists, 278; assistant pharmacists, 90; apprentices, 143.

Enlisted, 386; drafted, 99.

Army, 420; navy, 76; marine corps, 1; merchant marine, 1; Polish army, 2; Canadian army, 2.

In the Army: General Staff, 1; medical corps, 9; medical department, 227; infantry, 128; (students' army training corps, 65; central officers' training school, 10); artillery, 19; (central officers' training school, 5); cavalry, 1; aero corps, 4; tank corps, 4; signal corps, 2; engineers corps, 1; ordnance corps, 6; quartermasters' corps, 2; motor transfer corps, 1; chemical warfare service, 13; bakers' school, 1; band, 2.

In the Navy: Medical corps, 1; hospital corps, 67; yeomen, 5; seaman, 1; aviation, 1; radio, 1.

Rank: Lieutenant colonel, 1; major, 2; captain, 3; lieutenant, 22; sergeant, 21.

In the American Expeditionary forces: 193.

Deceased: 4.

From Chicago, 239; other Illinois cities, 247; other states, 25.

Student or graduate of University of Illinois School of Pharmacy, 198.—*N. A. R. D. Journal.*

SOCIETIES AND COLLEGES.

THE NEW YORK MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Only two months more and the time for the annual convention of the American Pharmaceutical Association will be at hand. The programs of the Sections are assuming shape; however, for most of them further contributions are desired. Those who have not already done so should send in the titles of their papers to one of the Section officers. The roster of the Association is printed in the January issue of the JOURNAL, page 69. The program of the New York Convention will be found on page 493 of this issue of the Journal.

During this month many of the State Pharmaceutical Associations convene, and these meetings offer the opportunity for members to discuss closer affiliation with the parent body and also to enlist the attendance of many who need just a little encouragement.

Pharmacy schools have either closed this year's session or will close during this month. It will be seen, by looking over the list of members who have continued their affiliation for twenty years or more, that these joined the Association soon after graduation from the school of pharmacy. This is a suggestion for members of the faculties. Their attention is also called to the date on which applications for the Fairchild Scholarship must be in the hands of Chairman H. C. Christensen, namely, June 25.

This is not only the Victory Convention but a Commencement meeting for a number of most important pharmaceutical undertakings.

EXHIBIT OF PHARMACEUTICAL MEDALS FOR THE A. PH. A. MEETING.

The New York College of Pharmacy, Columbia University, has undertaken the preparation of a loan collection of medals, tokens and jetons of pharmaceutical interest, to be shown at the sixty-seventh annual meeting of the American Pharmaceutical Association, which is to be held at the Pennsylvania Hotel, New York, during the week of August 25.

The college respectfully solicits the coöperation of pharmacists generally with a view to making this exhibit as interesting and complete as possible. The greatest care will be taken to insure the safekeeping and return of medals loaned, and full credit will be given at the exhibit of all courtesies extended.

The widest latitude will be exercised in making the collection, and everything in the shape of a medal, a token or a jeton will be welcome. This will include the commemorative medals struck in the cognate sciences, such as botany and chemistry, award medals, such as those given for exhibits of pharmaceutical preparations at international or similar expositions, or to distinguished pharmacists on special occasions, such as the Hanbury medal, or those awarded to students, such as the Bell medal of the British Pharmaceutical Society. The jetons struck by the College of Pharmacy of France and similar jetons would be welcomed. Tokens issued by pharmacists or druggists or by manufacturers of patent medicines are also within the scope of the collection.

The college is particularly desirous of obtaining a complete collection of the award medals offered by the various colleges, either by loan or purchase.

The college will also welcome essays or letters regarding pharmaceutical medals and should like any exhibit which may be sent to be accompanied by its history.

The library of the college is also making a permanent collection and has a fund for the purchase of such medals of general pharmaceutical interest as can be obtained at a moderate cost. All having such medals which they can give, lend or sell to the college are invited to correspond with the chairman of the committee, quoting prices on those offered for sale. Communications on this subject should be addressed to the chairman of the Medal Committee, New York College of Pharmacy, 115 West Sixty-eighth street, New York.

THE NATIONAL PHARMACEUTICAL SERVICE ASSOCIATION.

The following letter has been sent out by Secretary E. Fullerton Cook, of the National Pharmaceutical Service Association:

Notwithstanding the efforts of pharmacists and others, who are aware of the unscientific methods of dispensing medicines in vogue in the United States Army, the passage of the Edmonds' Bill failed in the last session of Congress. This bill aimed to establish a Pharmaceutical Corps as a branch of the Medical Department and to assure to our soldiers dependable medicines, dispensed by educated pharmacists.

At this time, there seems to be no prospect that Surgeon-General Ireland will deviate from the attitude of opposition to pharmacy that was announced by his predecessor and it is evident that pharmacy will be compelled to follow the example of dentistry in its campaign for a "Dental Corps," the value of which to the Army has now been thoroughly demonstrated. A further educational campaign is necessary to convince Congress and the officials of the War Department that they are negligent in not likewise providing for educated pharmaceutical service for our soldiers.

The National Pharmaceutical Service Association is convinced that in the advocacy of the Edmonds' Bill considerable progress was made in the needed campaign of education and it is the purpose of this organization to continue the propaganda thus inaugurated until pharmacy receives the merited consideration. With that end in view, it is the intent to reintroduce the Edmonds' Bill at the next session of Congress with such modifications as it is decided are necessary. The Executive Committee have been charged with the duty of obtaining the views of leading pharmacists and pharmaceutical societies as well as of others interested in this question. Hence we are addressing you and request that you submit any criticisms of the wording of the old Bill H. R. 5531, or, if you prefer, send a new draft, expressing your views on a "Pharmaceutical Corps" enactment.

It is imperative that, in all efforts to secure proper recognition for pharmacy, all pharmacists present a united front and unanimously support our earnest endeavors and that this include the coöperation of every pharmaceutical society that has been especially charged with the responsibility of furthering pharmaceutical interests.

We are pleased to report that a bill will be introduced into the next Congress providing for a reorganization of the Hospital Corps of the Navy and the granting of advanced rating and higher commissions to the pharmacists in that Corps. This will be favored by many of the Naval officials, and we as pharmacists must give it our heartiest support.

Will you kindly give the matter of suggestions for a redrafted Army Pharmaceutical Corps Bill your early attention and send your views to the Secretary. If at all possible, it is intended to have the redraft prepared in time for presentation and discussion at the New York Meeting of the A. Ph. A.

For the Executive Committee,
E. FULLERTON COOK, *Secretary*,
145 North Tenth Street,
Philadelphia, Pa.

(Signed) GEORGE M. BERINGER, *President*.

STATE PHARMACEUTICAL ASSOCIATION MEETINGS OF JUNE AND JULY.

DURING 2ND WEEK OF JUNE:

Alabama at Huntsville. President, C. W. Walker, Ensley; Secretary, W. E. Bingham, Tuscaloosa.

Florida at Tampa. President, M. A. Bize, Tampa; Secretary, J. H. Haughton, Palatka.

Georgia at Tybee Island. President, T. F. Burbank, Cedartown; Secretary, T. A. Cheatham, Atlanta.

Mississippi at Vicksburg. President, C. L. Anding, Flora; Secretary, A. S. Coody, Jackson.

Missouri at Excelsior Springs. President, Mrs. Minnie M. Whitney; Secretary, H. M. Whelpley, St. Louis.

New Jersey at Atlantic City. President, George M. Beringer, Jr., Camden; Secretary, Jeannot Hostmann, Hoboken.

DURING 3RD WEEK OF JUNE:

Colorado at Denver. President, C. W. Gilbert, Greeley; Secretary, Chas. J. Clayton, Denver.

Idaho at Twin Falls. President, A. E. Sutton, Caldwell; Secretary, Norman C. Beckley, Boise.

Illinois at Peoria. President, Frank J. Dubsky, Chicago; Secretary, Wm. B. Day, Chicago.

Kentucky at Harrodsburg. President, R. S. Berryman, Versailles; Secretary, J. W. Gayle, Frankfort.

Massachusetts at Boston. President, Clifford P. Thompson, Springfield; Secretary, James F. Guerin, Worcester.

Nebraska at York. President, J. E. Harper, Spencer; Secretary, J. G. McBride, University Place.

DURING 4TH WEEK OF JUNE:

Indiana at Culver. President, E. W. Stucky, Indianapolis; Secretary, Wm. F. Werner, Indianapolis.

New York at Saratoga Springs. President, H. B. Smith, Brooklyn; Secretary, E. S. Dawson, Syracuse.

North Carolina at Wrightsville Beach. President, S. E. Welfare, Winston-Salem; Secretary, J. G. Beard, Chapel Hill.

North Dakota at Fargo. President, Peter Mergins, Fairmount; Secretary, W. S. Parker, Lisbon.

Pennsylvania at Buena Vista Springs. President, Charles R. Rhodes, Hyndman; Secretary, R. P. Fischelis, Philadelphia.

Texas at Galveston. President, Tom J. Snell, Paris; Secretary, W. H. Cousins, Dallas.

Utah at Ogden. President, John L. Boyden, Coalville; Secretary, Eugene L. Wade, Salt Lake City.

Wisconsin at Elkhart Lake. President, H. F. Wussow, Milwaukee; Secretary, E. G. Raeuber, Milwaukee.

JULY MEETINGS:

Connecticut at New Haven, July 1–2. President, Carl R. Ramsey, New Britain; Secretary, P. J. Garvin, Bethel.

Maine at Kineo, July 12. President, Fred H. Neal, Garvin; Secretary, M. L. Porter, Danforth.

Ohio at Cedar Point, July 22–25. President, J. W. Dysle, Marietta; Secretary, Theo. D. Wetterstroem, Cincinnati.

Oregon at Portland, July 8–11. President, H. F. Brandon, Portland; Secretary, A. W. Allen, Portland.

South Carolina at Greenville, July 15–16. President, D. T. Riley, Florence; Secretary, F. M. Smith, Charleston.

South Dakota at Lead, July 29 or August 5. President, Fred Vilas, Pierre; Secretary, E. C. Bent, Dell Rapids.

Virginia at Natural Bridge, July 8–10. President, G. E. Thompson, Chatham; Secretary, E. L. Brandis, Richmond.

REPORT OF COMMITTEE ON PATENTS AND TRADE-MARKS OF AMERICAN DRUG MANUFACTURERS' ASSOCIATION. FAVORS PRODUCT PATENTS.

The report of Dr. J. M. Francis, Chairman of the Committee on Patents and Trade-marks of the American Drug Manufacturers' Association is a protest against the movement supported by some pharmaceutical associations and certain factions of the medical profession to eliminate the product patent insofar as it pertains to discoveries in medicine, pharmacy, and chemistry.

"Having spent months and perhaps years in scientific research," Dr. Francis said, "and having poured out money like water for materials, the designing of apparatus, and, finally, for the proper testing and the introduction of a therapeutic agent, according to the ethical code which the medical profession seeks to impose upon pharmaceutical manufacturers, the results are to be made absolutely free for the appropriation of every piratical opportunist who may see a chance to reap where he has not sown. This is certainly sacrificing the substance for the ideal with a vengeance, though one cannot, of course, but admire the altruistic spirit involved."

"For some inscrutable reason," Dr. Francis continued, "the gentlemen responsible for this proposed legislation forget the broad American principle of fair play and propose to indulge in class legislation of the most pronounced kind. A man who discovers a new toy or similar device may have as complete protection as the generous spirit of the American law can provide him. The man who devotes his brains and time and perhaps his entire fortune to the laborious development of a newly conceived therapeutic agent for the curing of some grave disease, is to be deprived of such protection."

Frank G. Ryan, President of Parke, Davis & Co., calls attention to the fact that the elimination of the product patent would defeat its own end. "No process patent," he said, "however well drawn, can be protected. You can get no evidence, except through a detective system put into the infringer's laboratory, to prove that he is using your process. There is no practical way of defending a process patent. If you do away with a product patent, there can be only one result: Every inventor that gets up a new medicinal product will manufacture it in secret. It will be a perpetual monopoly as long as he can keep it secret and the public will never get the benefit of its free use. Instead of being for seventeen years, it will be for seventy-seven years or one hundred and seventeen years; just so long as the manufacturer can keep his process secret."

ANNUAL MEETING OF CHICAGO VETERAN DRUGGISTS' ASSOCIATION.

The Annual Meeting of the Chicago Veteran Druggists' Association was held Thursday, May 15. President Frank Schrage and Secretary Wilhelm Bodemann presented their annual reports, both of which indicated that the association's work has progressed during the year just closed, the membership being up to the maximum and finances in excellent shape.

The Honorary President, O. F. Fuller, extended congratulations to the members upon the completion of another year in the association's history and concluded by invoking the richest blessing of Almighty God upon the organization throughout the coming year.

During the year the association has lost by death four of its honored members: F. M. Schmidt, Charles Fuller, Fred W. Blocki and Herman Weber.

The election of officers resulted as follows:
President, Frank Schrage.
Vice-President, E. von Hermann.
Sergeant-at-Arms, Iver Quales.

MINNESOTA "PREREQUISITE" DINNER.

Representative H. C. Trowbridge, of the Minnesota Legislature; J. P. Jelinek, Chairman of the Minnesota State Pharmaceutical Association's Legislative Committee, and Dr. E. L. Newcomb, Secretary of the Association, were the honored guests at a complimentary dinner given at the Saint Paul Hotel, St. Paul, Minn., the night of May 6, by fellow-druggists in tribute to their work toward the passage by the recent Minnesota Legislature of the long-sought "prerequisite" law.

Representative Trowbridge, who introduced the measure in the Legislature, is a druggist at Austin, Minn. Fifty guests attended the dinner.

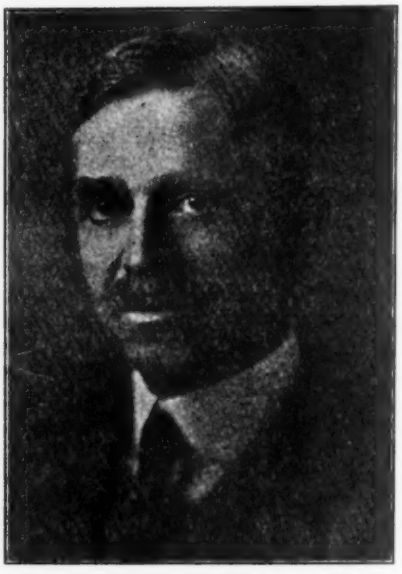
Dr. Newcomb was presented with a gold watch, the gift of his assembled colleagues of the pharmaceutical profession. Mr. Jelinek made the presentation speech.

Dean Frederick J. Wulling, of the University of Minnesota, spoke enthusiastically of the benefits that will accrue to Minnesota pharmacists through the passage of the prerequisite bill.

OBITUARY.

F. W. R. PERRY.

F. W. R. Perry, President of Detroit Drug Company, Michigan, died of pneumonia April 22. Mr. Perry graduated from the University of Michigan, Class of 1880; he retained his interest in the school and was always one of the leading spirits among the alumni of his Alma Mater. He was widely known as an Association worker and as a successful business man, the company of which he was the head owning ten or more retail drug stores in Detroit. Mr. Perry was for a number of years a member of the Michigan Board of Pharmacy, and President of the Detroit Retail Druggists' Association, and for a term President of the Michigan State Pharmaceutical Association. He was Local Secretary for the Mackinac meeting of the American Pharmaceutical Association and quite a regular attendant of the annual conventions of the A. Ph. A.



F. W. R. PERRY.

Mr. Perry was sixty years of age; he joined the Association in 1895. Mrs. Perry and a sister survive the deceased.

CLARENCE G. STONE.

Clarence G. Stone, late of Mt. Vernon, N. Y., was born in Detroit, Mich., July 3, 1859. After attending the public schools of the latter city he graduated from Detroit High School in 1875, and then attended the School of Pharmacy of the University of Michigan, where he earned the degree of pharmaceutical chemist. After graduation, Mr. Stone was engaged in the retail drug business for three years.

His first experience in the wholesale business was as a traveling salesman in Michigan territory and the Northwest for the firm of McKesson & Robbins, of New York, and he remained with them for seven years. In 1888 he decided to re-enter the retail business and bought a fourth interest in H. J. Milbourn & Co., of Detroit, by whom he had formerly been employed as a clerk, but after a year he again went on the road as a traveling salesman for the Mellin's Food Company. From 1889 to 1902 he held this position, traveling in Missouri, Michigan, Illinois, Nebraska and Minnesota, and later in New York State. He came to New York City in 1896, and left the company to go with the Lambert Pharmacal Company as New York manager of their eastern branch, which position he held until his death.

While Mr. Stone was frequently in attendance at the annual conventions of the American Pharmaceutical Association, his interests were largely with those of the National Wholesale Druggists' Association. He joined the A. Ph. A. in 1901.

The deceased was a member of quite a number of social and fraternal organizations, among the latter the Detroit Masonic bodies.

Mr. Stone married Miss Alice J. Evans, a sister of the late William J. Evans, of McKesson & Robbins, at Hamilton, Canada, in 1887. She died in 1902. He leaves a sister, Miss Edith May Stone, and two sons, Clarence G. Stone, Jr., and Evans E. A. Stone, both of Mt. Vernon.

Burial services were held in Detroit, Mich.

EDGAR R. THOME.

Edgar R. Thome died at his home, Jackson, Mich., March 22, 1919, of bronchial pneumonia. Mr. Thome was born October 11, 1885, at West Hanover, Pa. He was a graduate of the University of Maryland, Class of 1906. He was associated with Dr. Engelhardt, of Sharp & Dohme, Baltimore, Md., for three years, then accepted a position as chemist for the Tilden Company, New Lebanon, N. Y. At the time of his death he was chemist for the O. F. Schmid Chemical Co., Jackson, Mich., which position he had held for seven years; he was highly esteemed by the Company.

He is survived by his wife and two children,

also his mother and one brother who is a pharmacist in the Navy at Brest, France.

Funeral services were conducted by Rev. John Wall, of St. John's Catholic Church. Interment was made in St. John's cemetery at Jackson.

ROSE P. SCHMID.

Miss Rose P. Schmid died in Los Angeles, May 7, where she had gone about a year ago, seeking to improve her health.

Miss Schmid graduated from the Pharmacy Department of the University of Illinois in 1910. She was employed in the drug store of her brother, Louis Schmid, Chicago, and also for a time as pharmacist in the Chicago Hahneman Hospital.

The funeral ceremonies were held in Chicago and under the auspices of the Eastern Star. Many students and members of the faculty of the University of Illinois and representatives of the Chicago Retail Druggists' Association attended the burial services.

Miss Schmid joined the American Pharmaceutical Association in 1911.

THE PHARMACIST AND THE LAW.

Reports from Washington indicate that many Senators and Congressmen are heartily in favor of the repeal of the soda water and ice cream tax and also of the "luxury tax." The latter, in the opinion of the majority, will be repealed and it is believed by many that the soda water tax will be eliminated along with luxury levies. President Wilson in his message stated:

"Many of the minor taxes provided for in the revenue legislation of 1917 and 1918, though no doubt made necessary by the pressing necessities of the war time, could hardly find sufficient justification under the easier circumstances of peace, and can now happily be got rid of. Among these, I hope you will agree, are the excises upon various manufactures and the taxes upon retail sales. They are unequal in the incidence on different industries and on different individuals. Their collection is difficult and expensive. Those which are levied upon articles sold at retail are largely evaded by the readjustment of retail prices.

ALCOHOL LEGISLATION.

The Revenue Department is evidently desirous of handling the alcohol question without unreasonable restrictions, that may be permissible under the law. The officials realize the conditions and are willing to credit pharmacists with a desire to conform to the regulations. Common sense and necessity demand that no legislation be enacted that would prevent the manufacture and sale of bonafide medicinal preparations containing alcohol. Druggists should interest themselves more in the questions involved. President Charles H. LaWall, of the A. Ph. A., and other members of the Association, recently had a very satisfactory interview with the officials of the Revenue Department. They also attended the hearing of the Food Officials of the U. S. Department of Agriculture when proposed revision of the rules and regulations for the enforcement of the Food and Drugs Act was discussed, May 19.

EXCISE TAXES ON TOILET AND MEDICINAL PREPARATIONS.

IMPOSITION OF TAX.

SEC. 907. (*a*) That on and after May 1, 1919, there shall be levied, assessed, collected and paid (in lieu of the taxes imposed by subdivisions (*g*) and (*h*) of section 600 of the Revenue Act of 1917) a tax of 1 cent for each 25 cents or fraction thereof of the amount paid for any of the following articles when sold by or for a dealer or his estate on or after such date for consumption or use.

ARTICLE 1. *Effective date.*—The tax is effective as to all sales made on and after May 1, 1919, superseding the manufacturers' tax imposed by subdivisions (*g*) and (*h*) of section 600 of the Revenue Act of 1917, which tax remains in force until and including April 30, 1919.

ART. 2. *Basis of tax.*—The tax is measured by the price for which the article is sold. It is on the actual sales price and not on the list price, where that differs from the sales price. The tax is payable in respect to a sale made, whether or not the purchase price is actually collected. * * *

ART. 4. *Giving of premiums.*—The giving of so-called "premiums" in return for wrappers, labels, coupons, trading stamps, or other scrip delivered or sold in connection with the sale of a commodity is a sale by a dealer within the meaning of this section if the premium is within the class of enumerated articles. In such cases the tax attaches at the time title

in the premium passes to the person receiving it in exchange for such scrip and is to be computed on the fair market value of the premium at such time.

ART. 7. *Amount of the tax.*—The amount of the tax is 1 cent of each 25 cents or fraction thereof of the amount paid by the purchaser for the articles; and the dealer, after exactly determining the selling price of the article, must affix thereto stamp or stamps of the proper denomination denoting the correct amount of the tax; and these two amounts, being distinct separate entities, must be clearly shown to the purchaser to be the price of the article sold and the amount of the tax due thereon.

TOILET PREPARATIONS.

(1) Perfumes, essences, extracts, toilet waters, cosmetics, petroleum jellies, hair oils, pomades, hair dressings, hair restoratives, hair dyes, tooth and mouth washes, dentifrices, tooth pastes, aromatic cachous, toilet powders (other than soap powders), or any similar substance, article, or preparation by whatsoever name known or distinguished, any of the above which are used or applied or intended to be used or applied for toilet purposes.

ART. 9. *Toilet preparations.*—Section 907 includes concentrated extracts or essences sold to the user to be used in connection with the toilet, bath, or the care of the body, or upon the clothing as a perfume or toilet article. However, concentrated essences sold for the purpose of making toilet articles, but not for use as such, are not subject to the tax.

Toilet soap powders are expressly exempted by the act. Toilet soaps are not taxable under section 907, but they, as well as toilet soap powders, are taxable under section 900 when sold by the manufacturer, producer, or importer.

ART. 10. *Containers.*—The tax is upon the combined price of the container and its contents. The containers of taxable articles constitute a part of the article sold when sold filled with the taxable preparation.

MEDICINAL PREPARATIONS.

(2) Pills, tablets, powders, tinctures, troches or lozenges, sirups, medicinal cordials or bitters, anodynes, tonics, plasters, liniments, salves, ointments, pastes, drops, waters (except those taxed under section 628 of this act), essences, spirits, oils, and other medicinal preparations, compounds, or compositions (not including serums and antitoxins), upon the amount paid for any of the above as to which the manufacturer or producer claims to have any private formula, secret, or occult art for making or preparing the same, or has or claims to have any exclusive right or title to the making or preparing the same, or which are prepared, uttered, vended, or exposed for sale under any letters patent, or trade-mark, or which (if prepared by any formula, published or unpublished) are held out or recommended to the public by the makers, vendors, or proprietors thereof as proprietary medicines or medicinal proprietary articles or preparations, or as remedies or specifics for any disease, diseases, or affection whatever affecting the human or animal body: *Provided*, That the provisions of this section shall not apply to the sale of vaccines and bacterines which are not advertised to the general lay public, nor to the sale by a physician in personal attendance upon a patient of medicinal preparations not so advertised.

ART. 11. *Medicinal preparations: Articles included.*—A medicine, medicinal preparation, or specific is a preparation of any substance whatever intended to be applied for the prevention, cure, or mitigation of pain or disease in the human or animal body. Medicinal preparations for beasts, when the same would be taxable if used by man, are taxable; thus, for example, Arona, National Corn Remover, and Criswell's Jimson Weed Plasters are taxable. But sprays to be applied to cows, horses and other animals, to keep off flies, vermin, etc., are not taxable. (See Art. 17.)

PREPARATIONS NOT TAXABLE.

ART. 17. *Preparations not taxable.*—(*a*) Preparations made in accordance with formulas contained in the United States Pharmacopoeia and National Formulary by pharmaceutical manufacturers, when not held out or recommended as proprietary medicines or medicinal proprietary articles or preparations, or as remedies or specifics, are not subject to the tax, but if so held out or recommended they are taxable, although not identified by any name, trade-mark, or otherwise.

(*b*) Food preparations as distinguished from medicinal preparations are not taxable; thus products recommended as food for the sick (other than as remedies or specifics for an ailment), such as Thompson's malted milk,

malted beef peptone, or Horlick's malted milk, are not taxable. So, too, articles and preparations commonly known as stock foods, avenarious carbolineum, mixed feeds, chicken feeds, etc., not recommended or held out as remedies or specifics for affections or diseases, but as feed only, and other food preparations, whether for man or beast, unless held out or recommended as remedies or specifics for diseases of the human or animal body, are not taxable.

(*c*) Poisons and exterminators of rodents and insects, insecticides, disinfectants (other than those manufactured and sold for use in the treatment of wounds or as cleansers of any portion of the human or animal body), are not medicines or medicinal preparations, compounds, or compositions within the meaning of this section, and are not taxable.

(*d*) Vaccines and bacterines which are not advertised to the general lay public, and all serums and antitoxins, are specifically exempted from taxation.

(*e*) Natural mineral waters and table waters, and artificial mineral waters (whether carbonated or not), and other carbonated waters, are not taxable under section 907 if intended for use solely as beverages.

BOOK NOTICES AND REVIEWS.

Sex and Sex Worship. (Phallic Worship.) A scientific treatise on sex, its nature and function, and its influence on art, science, architecture, literature and religion—with special reference to sex worship and symbolism. By O. A. Wall, M.D., Ph.G., Ph.M. 625 pages, $6^3/_4 \times 9^3/_4$, with 375 beautiful illustrations, including halftones and line drawings, from one of the largest collections in the world on the subject. Beautifully printed on special sepia paper and bound in blue silk cloth with gold stamping on front cover and backbone. Price, postpaid, $7.50.

Professor Wall has written the first book that treats of phallic worship in nection with the evolution of the human body and mind. He has been an ardent student of the subject for more than a third of a century and only recently consented to the publication of his material. The book is authoritative. It explains the nature of sex and the ideas associated with it from primitive times to the present day; its influence on achievements of the human race in developing its religions, arts, architecture, literature, science and social relationships. The whole study is profusely illustrated with examples of ancient, medieval and modern art and ornamentation, Pagan as well as Christian.

Some of the subjects covered: Sex; Modern Religions; Other Beliefs; How Old is Mankind? Nature of Sex; Nature of Reproduction; Status of Woman; Cosmogonies; Gemetria; Bible of the Greeks; In Animals and Mankind; Light on a Dark Subject; Social Relations of Men and Women; Gratification of the Senses; Art and Ethics; Sculpture; Art Anatomy; Credulity; Lycanthropy; Origin of Religious Ideas; Primitive Beliefs; Sexual Relationships of the Gods; Gods Lived Like Men; Monogamy, Polygamy; Phallic Worship; Plant Worship; Animal Worship; Some Gods; Eternal Feminine; Virgin Worship; About Goddesses; Mere Mortal Women; Sexual Union among Deities; Serpent Worship; Worship of Heavenly Bodies; Phallic Festivals; Water; Is There an Immortal Soul?

Sex and Sex Worship has more or less interest for every student; however, few have given sufficient study thereto to attempt a critical review, hence this writing must be in the form of a notice. The name of the author and his extensive library on related subjects speak for the thoroughness with which the text has been prepared, and the publishers, C. V. Mosby Company, of St. Louis, have produced a work of art. The book is beautifully printed on tinted paper and handsomely bound in blue silk cloth with gold stamping on front cover and backbone.

Manual of Laboratory Practice for Students of Pharmacy. By George B. Kauffman, B.Sc., Phr.D., James H. Beal, D.Sc., Phr.D., and Julius A. Koch, Ph.D., Phr.D. Third edition, 92 pages, interleaved. Published by The Midland Publishing Company, Columbus, Ohio. Price, $1.50 plus postage.

This is the third edition of the Manual; the arrangement follows preceding editions. There are five parts and these are concerned with Physical Operations; Galenical Preparations; Preparation and Purification of Chemicals; Prescription Practice; Volumetric Analysis; Gravimetric Analysis and Pharmaceutical Assaying.

The purpose of the Manual is to serve as a guide for students in the laboratory work con-

cerned with the preparations, manipulations and processes dealt with. Types of these have been selected so that the experience gained with them enables the students to make further application. On the whole the selections have been carefully made; however, under Prescription Practice we fail to find prescriptions for liquids in capsules and ampuls. Also, in the revision, the preparation of Dakin's solution of Dichloramin T., etc. and paraffin films should have been added. Some of the galenicals might have been omitted, and others that are extensively used, like Solution of Magnesium Citrate, included.

While the Manual is primarily intended for students in colleges of pharmacy, it is adapted for home study.

PUBLICATIONS RECEIVED.

Proceedings of the Eighteenth Annual Session of the State Library and Historical Society of North Carolina, 1917. E. Vernon Howell, well-known member of the American Pharmaceutical Association, contributes to these pages (pp. 72–103) "Medical and Pharmaceutical Conditions in the Confederacy." The article, which is replete with statistics, was prepared from material in his extensive library. Aside from reports of the Medical Department relating to the Surgeon General's office, the hospitals, etc., an interesting table is given enumerating the indigenous drugs used, purpose and dose, that replaced unobtainable medicines. There is also a schedule of prices obtaining during these trying times

Proceedings of the Nineteenth Annual Meeting of the American Conference of Pharmaceutical Faculties, Chicago, August 12–13, 1918. Secretary Theodore J. Bradley has done good work in the preparation of this report. Halftone engravings of Professors Joseph P. Remington, Charles E. Caspari, Jr., and Alfred Birch Huested are included.

The Supplement to the United States Medical Bulletin. Published for the information of the Hospital Corps of the Navy.—Issued by The Bureau of Medicine and Surgery, Navy Department, Division of Publications, Captain J. S. Taylor, Medical Corps, United States Navy, in charge. Edited by Lieutenant Commander G. F. Cottle, Medical Corps United States Navy, April, 1919.

Copies of the Supplement may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., by inclosing 5 cents in cash.

This number of the Supplement contains papers 9 and 11 of the Correspondence Course for naval pharmacists. The first relates to the furnishing of a dispensary and the latter to the selection and purchase of X-ray equipment.

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